**GRUNDIG** SERVICE MANUAL

VIDEO

Ⓓ Btx *32700 #

# VS 680 VPT

Ⓓ

**Inhaltsverzeichnis** **Seite**

**Allgemeiner Teil** **2 - 32**
Meßgeräte / Meßmittel 2
Technische Daten 2
ⒹCHIP Technik 3 / 4
  Sicherheitsvorschriften 4
  Sicherheitsbestimmungen 5 / 6
  MOS-Bauelemente 7
  Oszillogramme 8
  Schaltplansymbole , Abkürzungen und Ausdrücke 9 - 1
ⒻTechnologie CMS 3 / 4
  Prescriptions de securite 4 - 6
  Circuits MOS 7
  Oscillogrammes 8
  Abreviations, Symboles schema, termes 9 - 16
ⒺTécnica CHIPS 3 / 4
  Recomendamos de seguridad 4
  Disposiciones para la seguridad 5 / 6
  Técnica MOS, Oscilogramas 8
  Abreviaturas, Simbolos en los esquemas, Términos 9 - 16
Buchsen 16
Prinzip des S-VHS 17 / 18
Bedienelemente 19 - 23
Servicehinweise 24 - 30
Service-Funktionen 31 / 32

**Elektrischer Teil** **33 - 206**
Blockschaltplan 33 - 37
Bedien - Einheit 39 - 45
**Chassisplatte I** **46 - 61**
• Netzteil 46 - 52
• Ablaufsteuerung I 53 - 61

**Chassisplatte II**

• Ablaufsteuerung II / DOS 62 - 73
Tuner / Modulator (TuMod) 74 - 77
ZF - Verstärker 77 - 81
Video 82 - 117
Chroma 118 - 148
Bildspeicher 149 - 169
Tonbaustein 170 - 196
Bild- / Ton - Kopfverstärker 197 - 201
Fernbedienung 202 - 206

**Mechanischer Teil** **207 - 225**
Explosionszeichnungen 226 - 229
Ersatzteilliste 230 - 260

GB

**List of contents** **Page**

**General part** **2 - 32**
Test equipment / aids 2
Specification 2
CHIP Technology 3 / 4
Safety requirements 4
Safety standard compliance 5 / 6
MOS chip componentes 7
Oscillograms 8
Circuit diagram symbols, Abbreviations, Terms 9 - 16
Sockets 16
Principles of S-VHS 17 / 18
General notes 19 - 23
Service Advice 24 - 30
Service functions 31 / 32

**Electrical part** **33 - 206**
Block circuit diagram 33 - 37
Keyboard unit 39 - 45
**Chassis board I** **46 - 61**
• Mains stage 46 - 52
• Sequence control I 53 - 61

**Chassis board II**

• Sequence control II / DOS 62 - 73
Tuner / Modulator (TuMod) 74 - 77
IF amplifier 77 - 81
Video 82 - 117
Chroma 118 - 148
Field memory 149 - 169
Sound module 170 - 196
Video / Audio Head amplifier 197 - 201
Remote control 202 - 206

**Mechanical part** **207 - 225**
Exploded views 226 - 229
Spare parts list 230 - 260

Ⓘ

**Indice del contenido** **Pagina**

**Parte generale** **2 - 32**
Strumenti / attrezzi di misura 2
Dati tecnici 2
Tecnica CHIP 3 / 4
Prescrizioni de sicurezza 4
Norme di sicurezza 5 / 6
Componenti MOS 7
Oscillogrammi 8
Simboli sullo schema, Abbreviazioni, Terminologia 9 - 16
Prese 16
Prinzipio del S-VHS 17 / 18
Elementi di comando 19 - 23
Istruzioni di servizio 24 - 30
Funzioni de servizio 31 / 32

**Parte elettrica** **33 - 206**
Schema elettrico a blocchi 33 - 37
Unità di comando 39 - 45
**Piastra telaio I** **46 - 61**
• Alimentatore 46 - 52
• Comando funzioni I 53 - 61

**Piastra telaio II**

• Comando funzioni II 62 - 73
Tuner / Modulatore (TuMod) 74 - 77
Amplificatore FI 77 - 81
Video 82 - 117
Chroma 118 - 148
Memoria d'immagine 149 - 169
Modulo audio 170 - 196
Amplificatore testina video/audio 197 - 201
Telecomando 202 - 206

**Parte meccanica** **207 - 225**
Esplosi 226 - 229
Lista ricambi 230 - 260

## D Meßgeräte / Meßmittel

## GB Test equipment/ aids

## I Strumenti / attrezzi di misura

| | | | z.B. / e.g. / **GRUNDIG** |
|---|---|---|---|
| Zweikanaloszilloskop | Dual channel oscilloscope | Oscill. a doppia traccia | MO 20, MO 53 |
| Regeltrenntrafo | Variable isolating transformer | Trasform. separatore regolabile | RT 5 A |
| Digitalmultimeter | Digital multimeter | Multimetro digitale | DM 60, DM 66 |
| Millivoltmeter | Millivoltmeter | Millivoltmetro | MV 60 |
| Tongenerator | AF Generator | Generatore audio | TG 6 |
| Frequenzzähler | Frequency counter | Frequenzimetro | UZ 120 |
| Farbgenerator | Colour generator | Generatore colore | FG 70 Stereo / PLL |
| | | | **Sach-Nr./Part no/No. ordine** |
| Kopfscheibenabzieher (VFK 0341) | Head wheel exractor (VFK 0341) | Chiave spec. per ruota testine | 75987 - 262.96 |
| Referenzplatte (VFK 0387) | Tension post adjustment plate (VFK 0387) | Piastra di riferimento (VFK0387) | 75987 - 262.86 |
| Einstellplatte (VFK 0191) | Post adjustment plate (VFK 0191) | Piastra di regolaz. (VFK 0191) | 75987 - 262.75 |
| Höhenmeßuhr (VFK 0190) | Dial hight gauge (VFK 0190) | Misurat. dell'altezza (VFK 0190) | 75987 - 262.76 |
| Höhenlehre (VFK 0344) | Hight gauge (VFK 0344) | Spessore (VFK 0344) | 75987 - 262.87 |
| Bandzugmesser (VFK 0132) | Tape tension meter (VFK 0132) | Misurat. di tensione (VFK 0132) | 75987 - 262.74 |
| Kontaktor (0,1N...1N) | Tension gauge (0.1N...1N) | Dinamometro (0,1N...1N) | 72001 - 401.00 |
| Einstellschraubendreher | Post adjustment screw driver | Cacciavite di regolazione | 75987 - 262.80 |
| Sechskant-Stiftschlüssel 2mm | Hexagonal wrench 2mm | Chiave esagonale da 2mm | 72004 - 082.00 |
| Testcassette | Test cassette | Cassetta campione | 9.27540 - 1011 |
| Testcassette (HiFi) | Test cassette (HiFi) | Cassetta campione (HiFi) | 9.27540 - 1016 |
| Service Adapter 501 | Service adapter 501 | Scheda di servizio 501 | 27505 - 033.01 |
| Service Adapter Set 680 | Service adapter set 680 | Kit di servizio 680 | 72008 - 453.50 |

Diese Meßmittel können Sie über die Serviceorganisation beziehen. Wir weisen jedoch darauf hin, daß diese z.T. bereits am Markt eingeführt sind.

**Testcassette**
**Sach-Nr. 9.27540 - 1011**

- Farbtestbild mit Dropout-Einblendung
- 6,3 kHz - Senkrecht-Vollspuraufzeichnung und Bezugspegel 333 Hz in dreiminütigem Wechsel.

**Testcassette (HiFi)**
**Sach-Nr. 9.27540 - 1016**

- Farbtestbild mit Dropout-Einblendung
- Längsspur - Ton : 6,3 kHz / 333 Hz
- FM-Ton : 1 kHz Vollpegel (± 50 kHz Hub)

You can order these test equipments from the Service organization. We refer to you that these test equipments are already obtainable on the market.

**Test cassette**
**Part no. 9.27540 - 1011**

- Colour test pattern with dropout recording
- 6.3 kHz vertical full-track recording alternating with 333 Hz reference level every 3 minutes.

**Test cassette (HiFi)**
**Part no. 9.27540 - 1016**

- Colour test pattern with dropout recording
- Longitudinal track sound : 6.3 kHz / 333 Hz
- FM sound: 1 kHz full level ( ± 50 kHz deviation)

Questi attrezzi di misura possono essere acquistati preso il Servizio di assistenza. Facciamo tuttavia presente che una parte degli attrezzi di misura in questione è già stata introdotto sul mercato.

**Cassetta campione 9.27540 - 1011**

- Monoscopio a colori con visualizzazione di drop out
- Regolazione di tutta la traccia verticale a 6,3 kHz alternata ogni 3 minuti dal livello di riferimento a 333 Hz.

**Cass.campione (HiFi) 9.27540 - 1016**

- Monoscopio a colori con visualizzazione di drop out
- Audio su traccia longit.: 6,3 kHz / 333 Hz
- Audio FM: massimo livello 1kHz (deviazione ± 50kHz)

| Technische Daten | Specification | Dati tecnici | |
|---|---|---|---|
| 1/2" Video-Cassettenrecorder | 1/2" video cassette recorder | Videoregistra. a cassette da 1/2" | |
| System | System | Sistema | VHS |
| Bandgeschwindigkeit | Tape speed | Velocità del nastro | 2,339 cm / s |
| Aufzeichnungsgeschwindigkeit | Head to tape speed | Velocità di registrazione | 4,84 m / s |
| FS-Norm | TV standard | Norma TV | CCIR, PAL B/G/H, SECAM B/G |
| **Video** | **Video** | **Video** | |
| Signal / Rauschabstand (VHS) | Signal / noise ratio (VHS) | Rapporto segnale/disturbo (VHS) | 45 ± 3 dB (unweighted) |
| Signal / Rauschabstand (S-VHS) | Signal / noise ratio (S-VHS) | Rapporto segnale/dist. (S-VHS) | 45 ± 3 dB (unweighted) |
| Auflösung (VHS) | Video resolution (VHS) | Risoluzione (VHS) | ca. /approx. 3 MHz |
| Auflösung (S-VHS) | Video resolution (S-VHS) | Risoluzione (S-VHS) | ca. /approx. 5 MHz |
| **Ton (Normal Play)** | **Sound (Normal Play)** | **Audio (Normal Play)** | |
| Frequenzgang | Frequency response | Risposta in frequenza | 40 Hz...10 kHz ± 5 dB<br>20 Hz...20 kHz ± 2 dB (HiFi) |
| Störabstand | Signal / noise ratio | Rapporto segnale/disturbo | >46dB (Standard), >78dB (HiFi) |
| **Ton (Longplay)** | **Sound (Longplay)** | **Audio (Longplay)** | |
| Frequenzgang | Frequency response | Risposta in frequenza | 40 Hz...5 kHz ± 5 dB<br>20 Hz...20 kHz ± 2 dB (HiFi) |
| Störabstand | Signal / noise ratio | Rapporto segnale/disturbo | >43dB (Standard), >78dB (HiFi) |
| Gleichlaufschwankung | Wow and flutter | Uniformità di scorrimento | < 0,35% (NP), <0,5% (LP), DIN |
| **Netzspannung** | **Mains voltage** | **Tensione di rete** | 180-240 V~, 50 / 60 Hz |
| **Leistungsaufnahme** | **Power consumption** | **Assorbimento** | |
| – Aufnahme | – Record | – registrazione | ca./approx. 37W |
| – Stop | – Stop | – stop | ca./approx. 33W |
| – Stand by | – Stand by | – stand by | ca./approx. 12W |
| **Umgebungstemperatur** | **Ambient temperature** | **Temperatura ambiente** | + 5 °C . . . + 35 °C |
| **Relative Luftfeuchte** | **Relative humidity** | **Umidità relativa** | ≤ 80 % |
| **Betriebslage** | **Operating position** | **Pos. di funzionamento** | horizontal / orizzontale |

**GRUNDIG service INFORMATION**

Februar 90

| | |
|---|---|
| **Video No.** | 2/90 |
| **Int.-No.** | 4/90 |
| **Audio No.** | |
| **Int.-No.** | |

| Verteiler | |
|---|---|
| **Fachhandel** | ☒ |
| Intern | ☒ |
| OEM | ☐ |
| Circulation: | |
| **Dealer** | ☐ |
| Internal | ☐ |
| OEM | ☐ |

INFORMATION

| | |
|---|---|
| VIDEO | ☒ |
| CAM CORDER | ☐ |
| TV | ☐ |
| HIFI | ☐ |
| CD | ☐ |
| AUDIO CASSETTE | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| Btx<br>Btx ★ 32700 # | ☐ |

**Gerät/Type:** VS 680 VPT

Wir informieren zu:

**Chromabaustein Sach-Nr. 27505-074.01**

**Mögliche Beanstandung:**

Blaustich aller über den Bildspeicher laufenden Bilder wie MEMO/DEMO-Bild, M-C-Bild, M-S-Bild, STROB-, MOSAIK- und PAINT-Effekt, ZOOM-Bild, PIP und Secam-Bild.

**Ursache:**

Die Streuung der Farbträgeramplitude und der Phasenlage des PAL-Encoders (IC 1880 am Chroma-Baustein) ist zu groß.

**Abhilfe:**

Ändern folgender Bauteile des Chroma-Bausteines:
- CR 1887 von 1,8kΩ in 1,2kΩ.
- CC 1940 von 680pF in 1500pF.
- CR 1902 (1kΩ) entfernen.
- Einbau eines 270Ω Widerstandes von der Mittelanzapfung der Spule L 1900 zum Emitter des Chip-Transistors CT 1902.

**Werkstatt:**

Im Reklamationsfall Änderung durchführen.

**Modulreparatur:**

Die Änderung wird generell eingebaut.

**Lagerhaltung:**

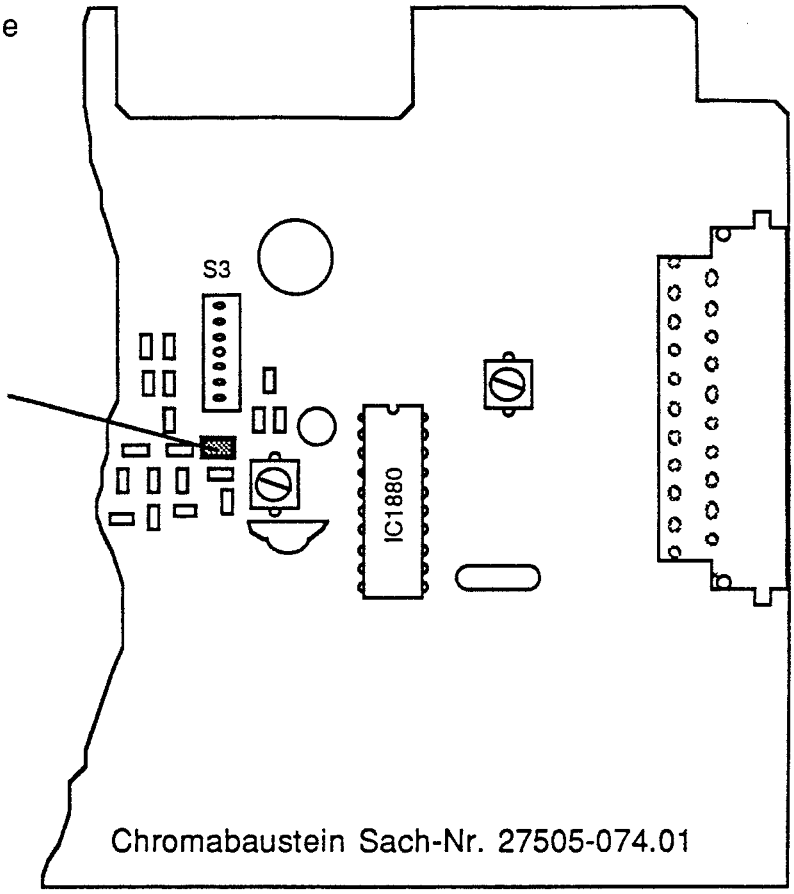
| | |
|---|---|
| Chip-Widerstand 1,2kΩ | Sachnummer: 8706-297-075 |
| Chip-Kondensator 1500pF | Sachnummer: 8672-267-143 |
| Widerstand 1,2kΩ | handelsüblich |

**Hinweis:**

Diese Änderung wurde in der Fertigung ab Oktober 1989 eingeführt.

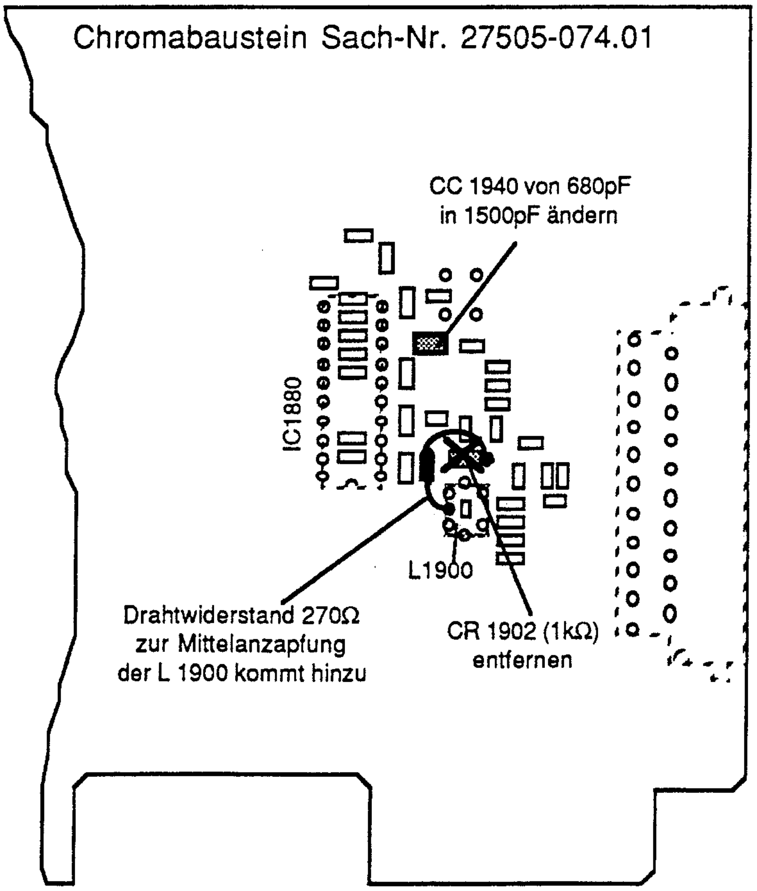
. . .

Bestückungsseite


S3
IC1880
Chromabaustein Sach-Nr. 27505-074.01

CR 1887 von 1,8kΩ
in 1,2kΩ ändern

Lötseite

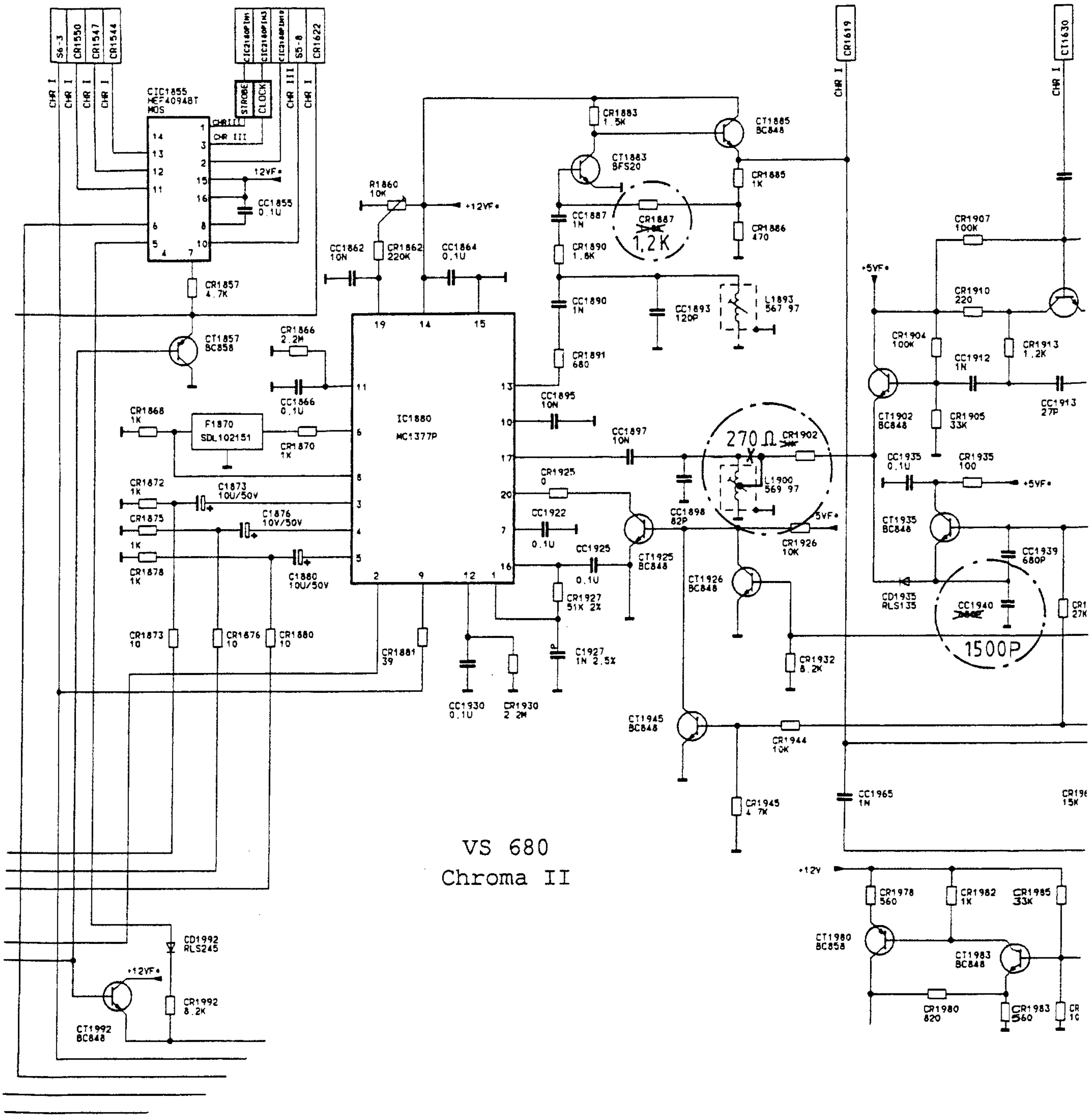

Chromabaustein Sach-Nr. 27505-074.01
IC1880
L1900

CC 1940 von 680pF
in 1500pF ändern

Drahtwiderstand 270Ω
zur Mittelanzapfung
der L 1900 kommt hinzu

CR 1902 (1kΩ)
entfernen

. . .


S6-3
CR1550
CR1547
CR1544
CIC2160P1M1
CIC2160P1M3
CIC2160P1M10
S5-8
CR1622
STROBE
CLOCK
CHR I
CHR III
CIC1855
HEF4094BT
MOS
12VF+
CC1855
0.1U
CR1857
4.7K
CT1857
BC858
CR1619
CT1630
R1860
10K
+12VF+
CC1862
10N
CR1862
220K
CC1864
0.1U
CR1866
2.2M
CC1866
0.1U
CR1868
1K
F1870
SDL102151
CR1870
1K
CR1872
1K
C1873
10U/50V
CR1875
C1876
10V/50V
1K
CR1878
1K
C1880
10U/50V
CR1873
10
CR1876
10
CR1880
10
CR1881
39
IC1880
MC1377P
CC1930
0.1U
CR1930
2.2M
CR1883
1.5K
CT1885
BC848
CT1883
BFS20
CR1885
1K
CC1887
1N
CR1887
1,2K
CR1886
470
CR1890
1.8K
CC1890
1N
CC1893
120P
L1893
567 97
CR1891
680
CC1895
10N
CC1897
10N
270 Ω
CR1902
L1900
569 97
CC1898
82P
5VF+
CR1926
10K
CR1925
0
CC1922
0.1U
CC1925
0.1U
CT1925
BC848
CR1927
51K 2%
C1927
1N 2.5%
CT1926
BC848
CR1932
8.2K
CT1945
BC848
CR1944
10K
CR1945
4.7K
CC1965
1N
CR196
15K
+5VF+
CR1907
100K
CR1910
220
CR1904
100K
CR1913
1.2K
CC1912
1N
CC1913
27P
CT1902
BC848
CR1905
33K
CC1935
0.1U
CR1935
100
+5VF+
CT1935
BC848
CC1939
680P
CD1935
RLS135
CC1940
1500P
CR1
27K
CD1992
RLS245
+12VF+
CR1992
8.2K
CT1992
BC848
+12V
CR1978
560
CR1982
1K
CR1985
33K
CT1980
BC858
CT1983
BC848
CR1980
820
CR1983
560
CR
10

VS 680
Chroma II

14

V09402

**GRUNDIG service**
INFORMATION

Februar 91

Video No. 4/91

Int.-No. 4/91

Audio No.

Int.-No.

| Verteiler | |
|---|---|
| Fachhandel | X |
| Intern | X |
| OEM | |
| Circulation: | |
| Dealer | |
| Internal | |
| OEM | |

INFORMATION

Gerät/Type: Video

Wir informieren zu: **Video VS 680 VPT**

1. **Änderung im Amplitudensieb zum Empfang nicht normgerechter Signale.**
2. **Hub-Änderung gegen Ausreißer bei Schrifteinblendung mit Fremdaufnahmen.**
3. **Eprom-Änderung zur Sat-Receiversteuerung.**
4. **Hinweis zum Austausch des AW-Kopfes .**

**Mögliche Beanstandung:**

1. Unruhiger horizontaler Bildstand, sowie zeitweises Ausrasten des Kopfservo in Form von Bildspringen.
2. Bei Schrifteinblendung treten horizontale Ausreißer der vertikalen senkrechten Schriftzeichen auf.
3. STR 12 und STR 300 werden bei vorprogrammierter SAT-Steuerung immmer auf einen zweistelligen Programmplatz eingeschaltet.
4. Beim Tausch des AW-Kopfes läßt sich der neue Kopf nicht ohne weiteres in die Druckplatte einlöten.

**Ursache:**

1. Der Schmitt-Trigger (CT 2777 und CT 2780) auf der Videoplatte II erhält über seine Integrationskette zeitfehlerbehaftete Impulse, die zu Einbrüchen des für die Aufnahme erforderlichen V-Impulses führen.
2. Die Fremdaufzeichnung ist im Bereich der Schrifteinblendung mit zu großem Hub aufgesprochen.
3. Durch die Zeitfensterschaltung (analog wie bei den neuen FFS-Geräten) wird der SAT-Receiver seriell gesteuert. Das 1. Bit schaltet die 1, und über das 2. Bit des VPS-Signals wird nochmals die 1 geschaltet; somit wird das SAT-Gerät nicht auf Programmplatz 1, sondern auf 11 geschaltet.
4. Die Druckplattenlöcher zur Aufnahme des neuen AW-Kopfes entsprechen nicht genau dem Raster des neuen AW-Kopfes.

**Abhilfe:**

1. Video II, Sach-Nr. 27505-076.01,
   Kollektor CT 2277 über einen Widerstand von 3,9 KΩ an +5V legen. Zusätzlich einen CR von 68 KΩ von der Basis CT 2780 nach Masse und einen CR 680 Ω von der Basis dieses Transistors nach +5V löten. Den CR 2782 gegen einen CC 10 nF austauschen. Kondensator CC 2778 überbrücken, CR 2780 entfernen und CR 2777 in 120 Ω ändern.
   Die Kondensatoren CC 2782 von 3,3 nF in 1 nF und CC 2785 von 18 nF in 3,3 nF ändern.

2. Video III, Sach-Nr. 27505-077.01, CC 3076 von 68 pF in 56 pF und CR 3076 von 330 Ω in 270 Ω ändern.

3. Austausch der beiden EPROMS in die Version 29 A und B.

4. Löcher des Platinenhalters auf die erforderliche Größe aufbohren.

...

| | |
|---|---|
| VIDEO | X |
| CAM CORDER | |
| TV | |
| HIFI | |
| CD | |
| AUDIO CASSETTE | |

Btx
Btx ★ 32700 #

**Werkstatt:**

Änderungen bei Bedarf einbauen;

Pos. 3 ist nur erforderlich bei Anschluß der genannten Sat-Receiver STR 12 und 300.

**Modulreparatur:**

Die Änderungen werden nicht eingebaut.

**Lagerhaltung:**

Für Position 1, 2 und 4, die Sach Nr. dem Servicemanual entnehmen.

| | | |
|---|---|---|
| EPROM Status 28 | A, | Sach Nr. 19798-005.26 |
| | A, | Sach Nr. 19798-003.84 |
| EPROM Status 29 | A, | Sach Nr. 19798-007.45 |
| | B, | Sach Nr. 19798-006.24 |

ABT. TECHNIK-INFORMATIONSWESEN

V 09403

**GRUNDIG service INFORMATION**

Oktober 90

| | |
|---|---|
| **Video No.** | 18/90 |
| **Int.-No.** | 21/90 |
| **Audio No.** | |
| **Int.-No.** | |
| Verteiler | |
| **Fachhandel** | ☒ |
| Intern | ☒ |
| OEM | ☐ |
| Circulation: | |
| **Dealer** | ☐ |
| Internal | ☐ |
| OEM | ☐ |

INFORMATION

| | |
|---|---|
| VIDEO | ☒ |
| CAM CORDER | ☐ |
| TV | ☐ |
| HIFI | ☐ |
| CD | ☐ |
| AUDIO CASSETTE | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| | ☐ |
| Btx | |

Btx ★ 32700 #

**Gerät/Type:** Video

Wir informieren zu:

## Umrüstung von Videorecordern auf Mehrnormenempfang

| VCR-Gerät | Nachrüstung zum zusätzlichen Empfang von | | | |
|---|---|---|---|---|
| | Sendungen nach Norm B, G, H / Secam (z.B. BRD-Ost, Iran, Irak, Ägypten, Saudi-Arabien, Griechenland) | Sendungen nach Norm I (z.B. Großbritannien, Irland, Südafrika) | Sendungen nach Norm D, K, K 1/ Secam (z.B. CSFR, Polen, UdSSR, Ungarn, Bulgarien ) | Seite |
| VS 300 P/S | ● | 16 | 17 | 3 |
| VS 310 P/S | ● | 16 | 17 | 3 |
| VS 320 P/S | ● | 16 | 17 | 3 |
| VS 340 P/S | ● | 16 | 17 | 3 |
| VS 380 P/S | ● | 16 | 17 | 3 |
| VS 400 P/S | ● | 16 | 17 | 4 |
| VS 410 P/S | ● | 16 | 17 | 4 |
| VS 440 P/S | ● | 16 | 17 | 4 |
| VS 450 P/S | ● | 16 | 17 | 4 |
| VS 460 P/S | ● | 16 | 17 | 4 |
| VS 500 VPS | ● | 16 | 17 | 4 |
| VS 505 VPS | ● | 16 | 17 | 4 |
| VS 510 VPS | ● | 16 | 17 | 4 |
| VS 520 VPS | ● | 16 | 17 | 5 |
| VS 530 VPS | ● | 16 | 17 | 5 |
| VS 540 VPS | ● | 16 | 17 | 5 |
| VS 550 E | ● | 16 | 17 | 5 |
| SE 5110 VPS | ● | 16 | 17 | 4 |
| SE 5140 VPS | ● | 16 | 17 | 5 |
| VS 5180 VPS | ● | 16 | 17 | 4 |
| VS 5480 VPS | ● | 16 | 17 | 5 |
| VS 600 VPS | ● | 16 | 17 | 4 |
| VS 610 VT | ● | 16 | 17 | 4 |
| VS 620 | nur PAL | 16 | 17 | 6 |
| VS 630 VPT | ● | 16 | 17 | 6 |
| VS 640 VPT | ● | 16 | 17 | 6 |
| VS 650 VPT | ● | 16 | 17 | 6 |
| VS 660 VPT | ● | 16 | 17 | 6 |
| VS 680 VPT | ● | 16 | 17 | 7 |
| SE 6110 VT | ● | 16 | 17 | 4 |
| SE 6160 VPT | ● | 16 | 17 | 6 |
| VS 6190 VT | ● | 16 | 17 | 4 |
| VS 6690 VPT | ● | 16 | 17 | 6 |
| TVR 4500 P/S | ● | 16 | 17 | 7 |
| TVR 4510 P/S | ● | 16 | 17 | 7 |
| TVR 5510 P/S | ● | 16 | 17 | 7 |

● = vorhanden

...

| Zahlenschlüssel | Zum Nachrüsten | Freiwerdende Bausteine |
|---|---|---|
| 16 | Ton-ZF-Umsetzer 5,5/6,0 1) | -- -- |
| 17 | Ton-ZF-Umsetzer 5,5/6,5 1) | -- -- |

1) handelsüblicher Baustein

z.B. von: Firma
Zahner elektrik
Postfach 530
8640 Kronach

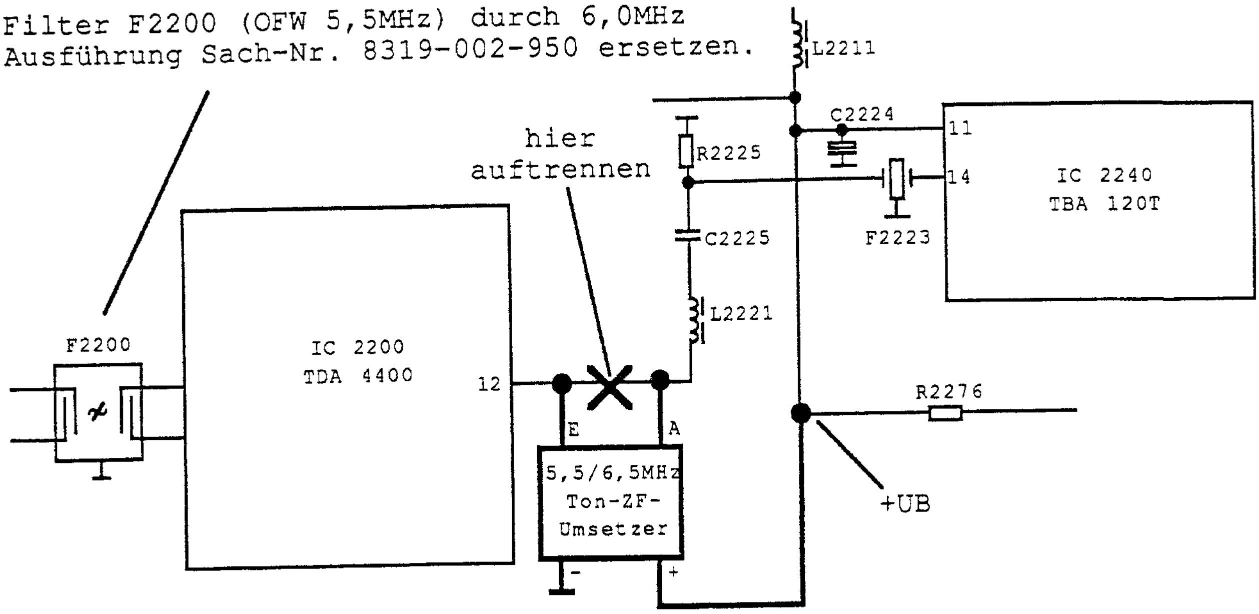
Die Umrüstung der Geräte des Systems 2000 und die der VHS-Geräte VS 122, VS 180, VS 200, VS 220, VS 265 RC, VS 310, VS 320, VS 380 wurde im Service-Hinweis 4/86 vom März 86 beschrieben.

### **Übersicht verwendeter Oberflächenwellenfilter**

| Gerät | Filter für 5,5MHz ZF | | Filter für 5,5-6,5MHz ZF | |
|---|---|---|---|---|
| | Typ | Sach-Nr: | Typ | Sach-Nr: |
| VS 300 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 310 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 320 | G 3203 | 8319-001-731 | J 3201 | 8319-001-732 |
| VS 380 | G 3203 | 8319-001-731 | J 3201 | 8319-001-732 |
| VS 400 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 410 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 440 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 450 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 460 | G 1956 | 8319-001-957 | K 2950 | 8319-002-950 |
| VS 500 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 505 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 510 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 520 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 530 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 540 | G 3203 | 8319-001-731 | J 3201 | 8319-001-732 |
| VS 550 | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| VS 600 | G 1958 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 610 | G 1958 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 620 | G 1968 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 630 | G 1968 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 640 | G 1968 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 650 | G 1968 | 8319-001-955 | K 2950 | 8319-002-950 |
| VS 660 | G 3352 | 8319-003-352 | J 3351 | 8319-003-351 |
| VS 680 VPT | G 3203 | 8319-001-731 | J 3201 | 8319-001-732 |
| TVR 4500 P/S | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| TVR 4510 P/S | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |
| TVR 5510 P/S | G 1958 | 8319-001-956 | K 2950 | 8319-002-950 |

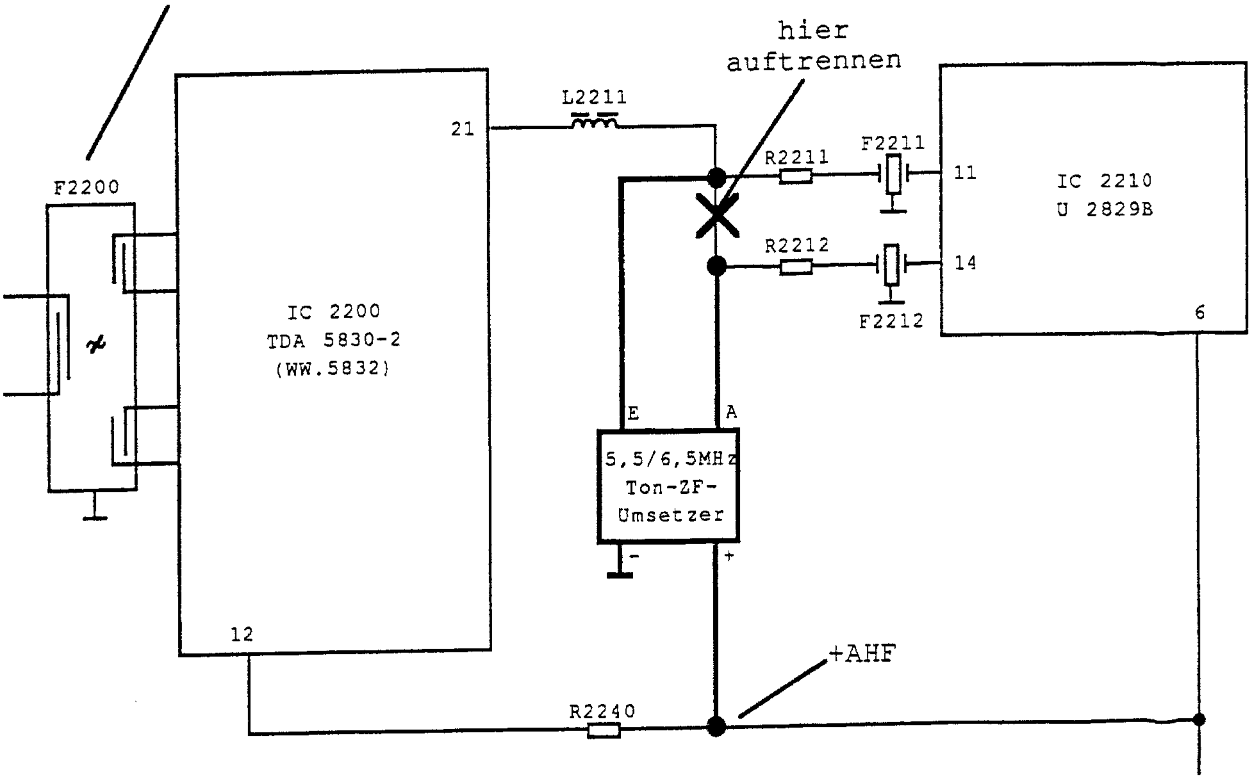
## VS 300 P/S, VS 310 P/S
## ZF-Baustein 29502-026.04

Filter F2200 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-002-950 ersetzen.


L2211
C2224
hier
auftrennen
R2225
11
14
IC 2240
TBA 120T
C2225
F2223
L2221
F2200
IC 2200
TDA 4400
12
E
A
R2276
5,5/6,5MHz
Ton-ZF-
Umsetzer
+UB
-
+

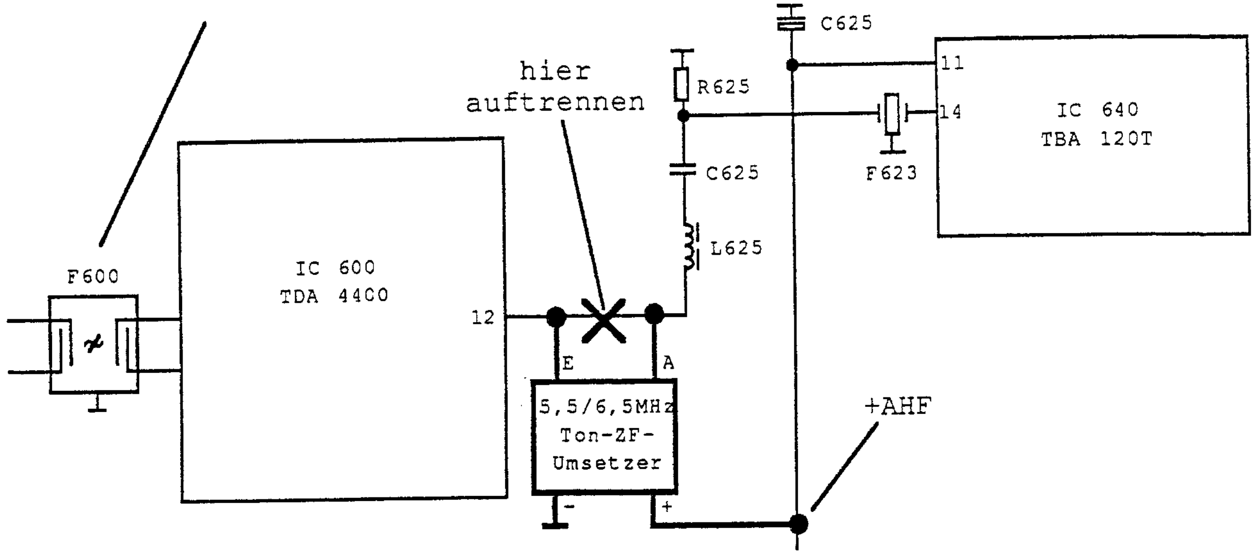
## VS 320 P/S, VS 340 P/S, VS 380 P/S
## ZF-Baustein 29502-026.01/05

Filter F2200 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-001-732 ersetzen.


hier
auftrennen
L2211
21
F2200
R2211
F2211
11
IC 2210
U 2829B
R2212
14
F2212
6
IC 2200
TDA 5830-2
(WW.5832)
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
12
+AHF
R2240

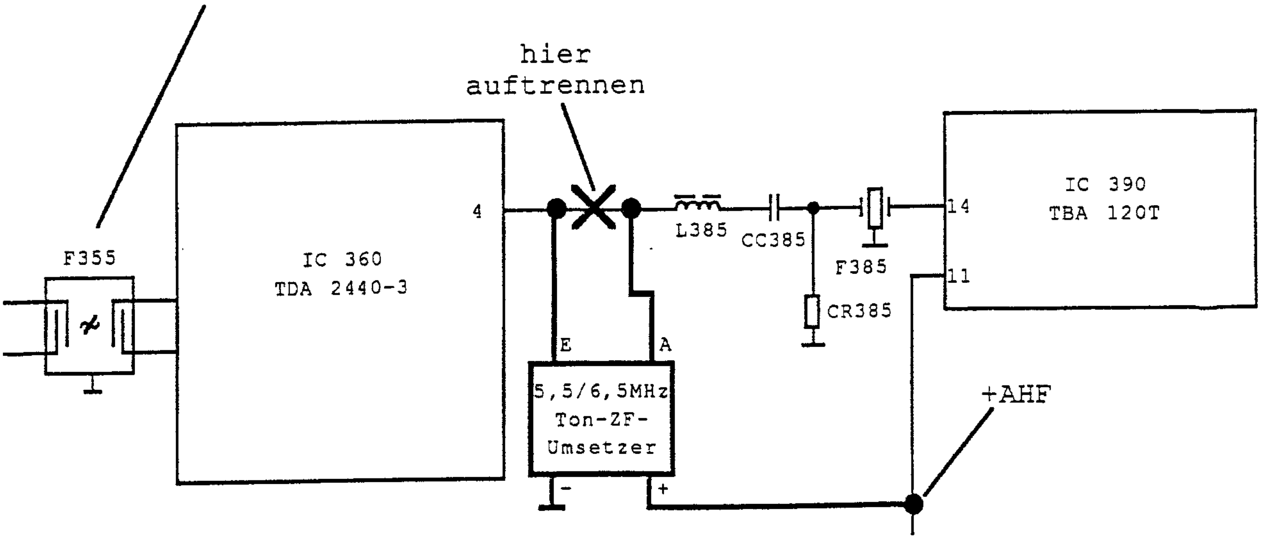
**VS 400 P/S, VS 410 P/S, VS 440 P/S, VS 450 P/S, VS 460 P/S**
**Chassisplatte I (ZF-Teil) 27505-003.01/17**

Filter F600 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-002-950 ersetzen.


C625
hier
auftrennen
R625
11
14
IC 640
TBA 120T
C625
F623
L625
F600
IC 600
TDA 4400
12
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
+AHF
-
+

**VS 500 VPS, VS 505 VPS, VS 510 VPS, SE 5110 VPS, VS 5180 VPS,**
**VS 600 VPS, VS 610 VT, SE 6110 VT, VS 6190 VT**
**Chassisplatte (ZF-Teil)**

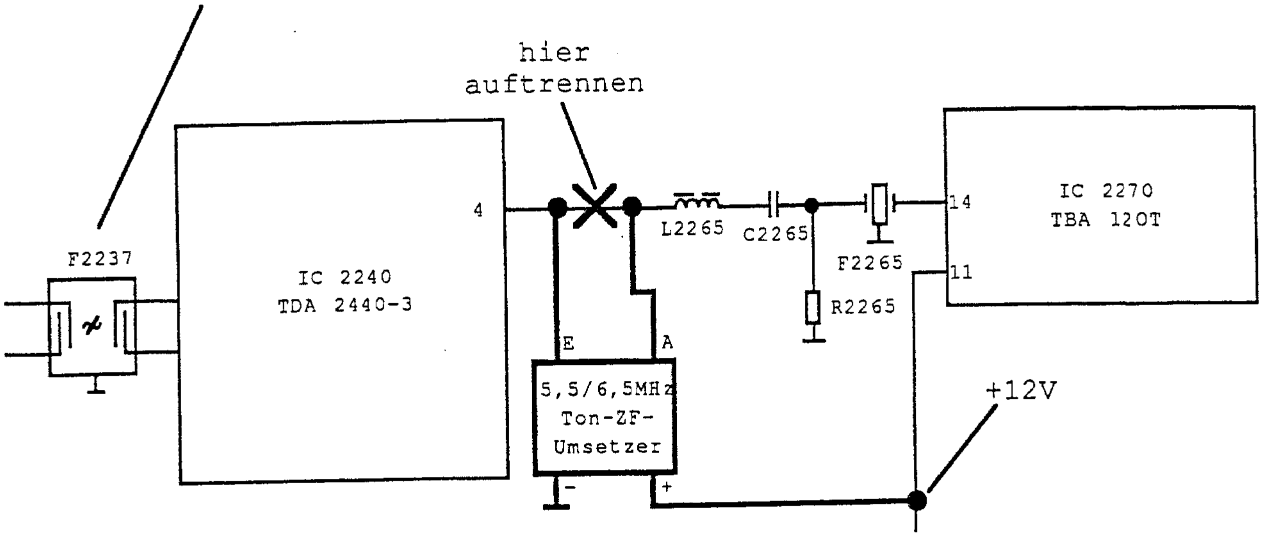
Filter F355 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-002-950 ersetzen.


hier
auftrennen
IC 390
TBA 120T
4
L385
CC385
14
F385
11
F355
IC 360
TDA 2440-3
CR385
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
+AHF
-
+

. . .

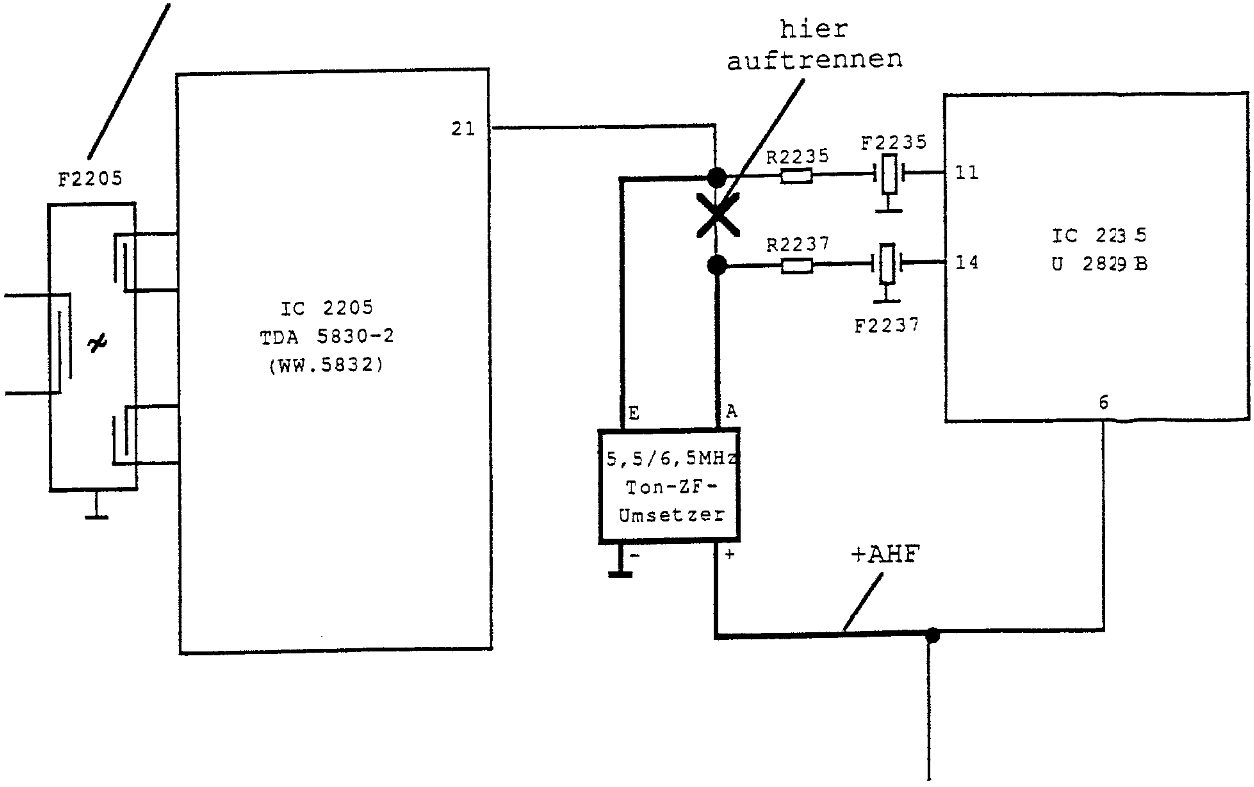
## VS 520 VPS, VS 530 VPS, VS 550 E
**Chassisplatte (ZF-Teil)**

Filter F2237 (OFW 5,5MHz) durch 6,0MHz Ausführung Sach-Nr. 8319-002-950 ersetzen.


hier
auftrennen
F2237
IC 2240
TDA 2440-3
4
L2265
C2265
F2265
R2265
14
11
IC 2270
TBA 120T
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
+12V

## VS 540 VPS, SE 5140 VPS, VS 5480 VPS
**ZF-Baustein 27505-023.11**

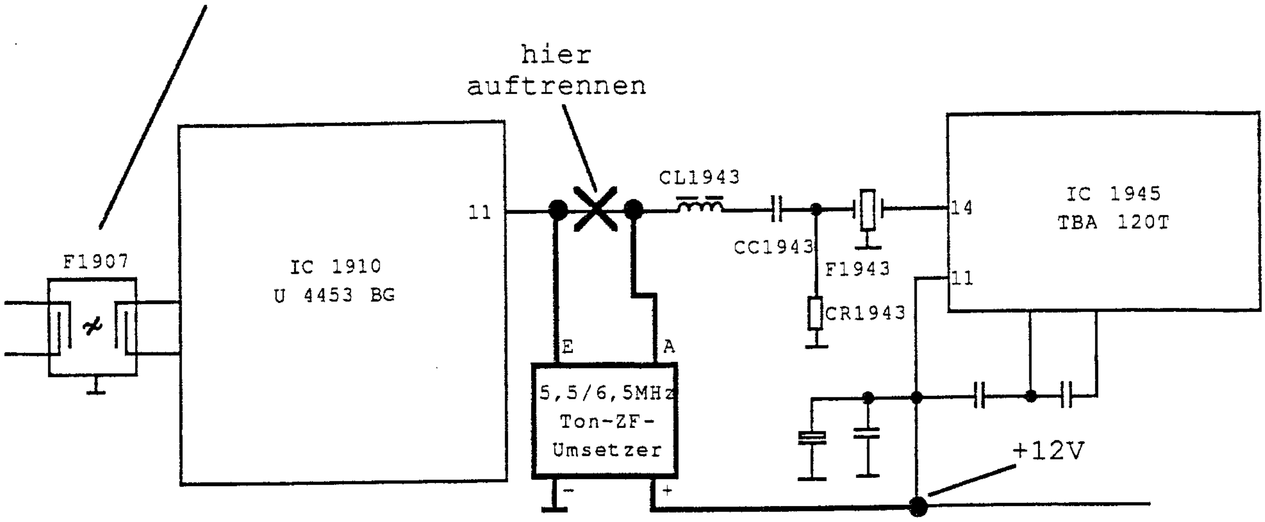
Filter F2205 (OFW 5,5MHz) durch 6,0MHz Ausführung Sach-Nr. 8319-001-732 ersetzen.


hier
auftrennen
F2205
IC 2205
TDA 5830-2
(WW.5832)
21
R2235
F2235
R2237
F2237
11
14
IC 2235
U 2829 B
6
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
+AHF

. . .

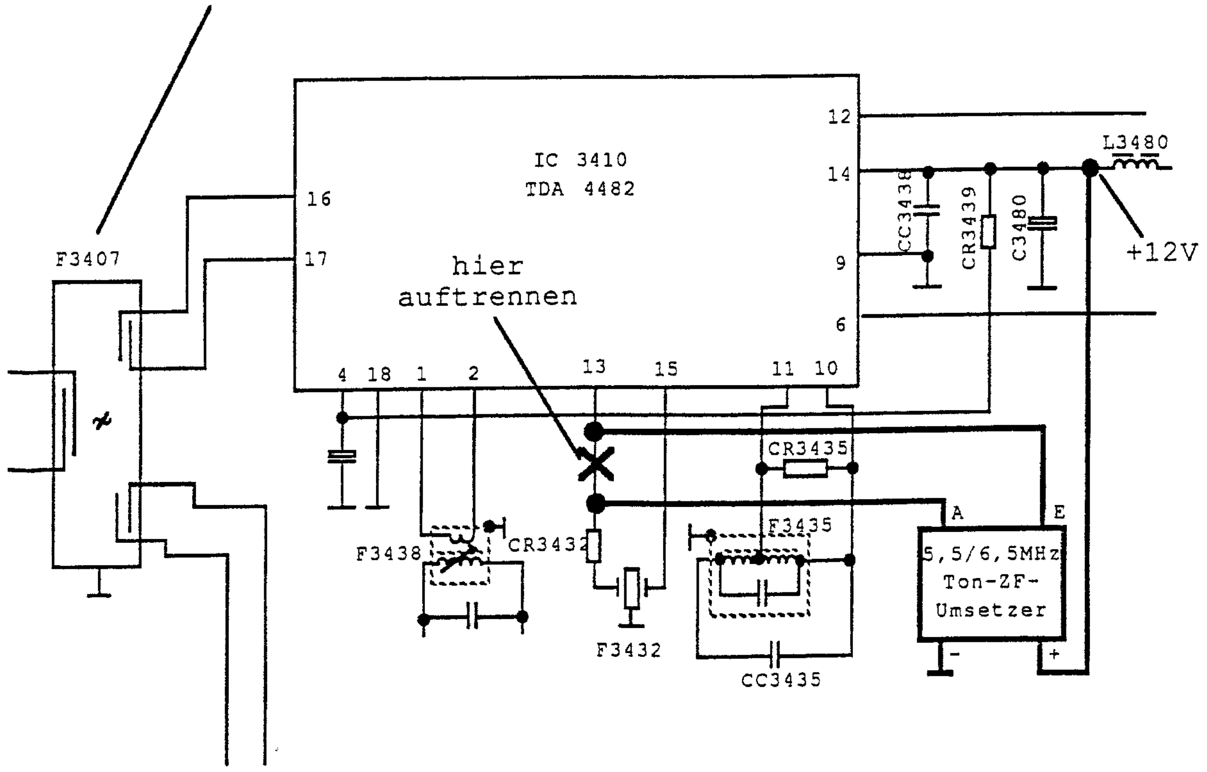
## VS 620, VS 630 VPT, VS 640 VPT, VS 650 VPT
## Chassisplatte (ZF-Teil)

Filter F1958 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-002-950 ersetzen.


hier
auftrennen
F1907
IC 1910
U 4453 BG
11
CL1943
CC1943
F1943
CR1943
14
11
IC 1945
TBA 120T
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
+12V

## VS 660 VPT, SE 6160 VPT, VS 6690 VT
## Chassisplatte (ZF-Teil)

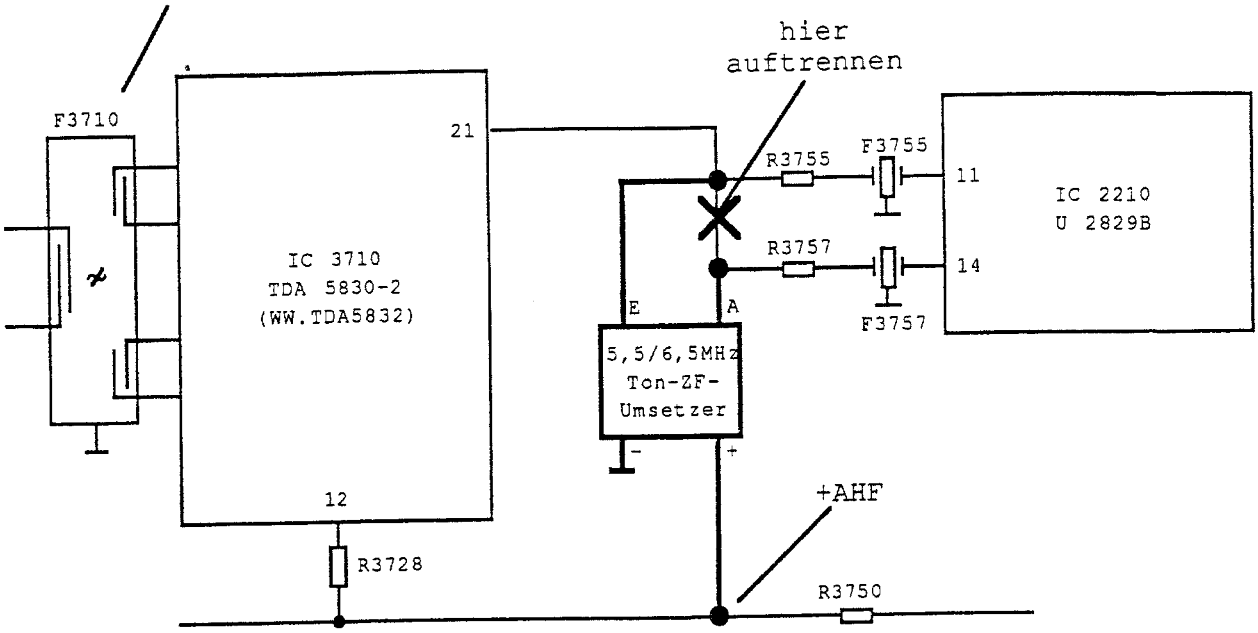
Filter F3407 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-003-351 ersetzen.


F3407
IC 3410
TDA 4482
16
17
12
14
9
6
hier
auftrennen
4
18
1
2
13
15
11
10
CC3438
CR3439
C3480
L3480
+12V
CR3435
F3438
CR3432
F3432
F3435
CC3435
A
E
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+

. . .

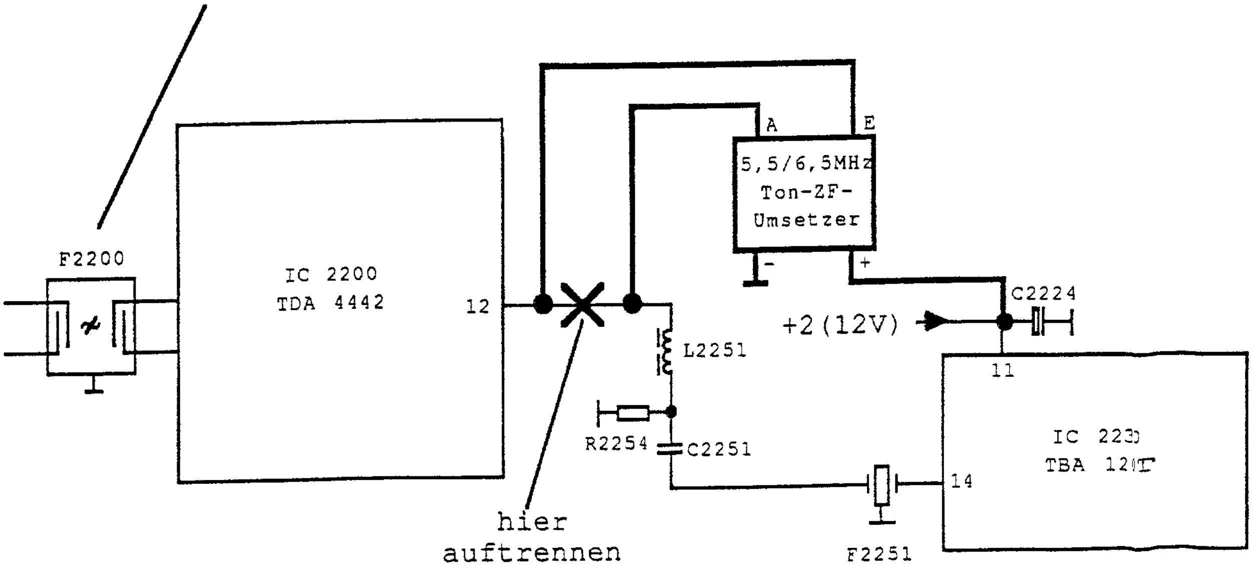
**VS 680 VPT**
**ZF-Baustein 27505-080.01**

Filter F3710 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr: 8319-001-732 ersetzen.


hier
auftrennen
F3710
IC 3710
TDA 5830-2
(WW.TDA5832)
21
12
R3728
R3755
F3755
R3757
F3757
E
A
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
+AHF
R3750
11
14
IC 2210
U 2829B

**TVR 4500 P/S, TVR 4510 P/S, TVR 5510 P/S**
**ZF/Sync.-Baustein 29504-102.67**

Filter F2200 (OFW 5,5MHz) durch 6,0MHz
Ausführung Sach-Nr. 8319-002-950 ersetzen.


F2200
IC 2200
TDA 4442
12
A
E
5,5/6,5MHz
Ton-ZF-
Umsetzer
-
+
+2(12V)
C2224
L2251
R2254
C2251
11
14
IC 2230
TBA 120T
F2251
hier
auftrennen

Bei Rückfragen wenden Sie sich bitte an die für Sie zuständige Grundig Servicestelle.

ABT. SERVICETECHNIK-INFORMATION

## (D) CHIP Technik

### Aus- und Einlöten von CHIP-Bauteilen

- Verwenden Sie nur einen Niedervoltlötkolben mit Temperaturregelung.
- Die Löttemperatur sollte ca. 240 °C betragen (max. 300 °C).
- Halten Sie die Lötzeit so kurz wie möglich.
- Belassen Sie CHIP-Bauteile bis zur Bearbeitung in der Originalverpackung. Damit wird die Oxidation der Stirnkontakte vermieden.
- Berühren Sie CHIP- Bauteile nicht mit der bloßen Hand.

### Auslöten von CHIP-Bauteilen

1. Schritt: CHIP- Lötstelle mit Sauglitze absaugen (Fig. 1).
2. Schritt: CHIP-Enden, bzw. das komplette CHIP-Bauteil erwärmen. CHIP von der Klebung ohne Kraftaufwand abdrehen, damit unter dem CHIP liegende Leiterbahnen nicht abgerissen werden (Fig. 2).

**Achtung!** **Ausgelötetes CHIP nicht wiederverwenden! Die leitende Schicht kann ausgebrochen sein.**

### Einlöten von CHIP-Bauteilen

3. Schritt: Lötpunkt von Lötrückständen säubern. Lötperle anbringen (Fig. 3).
4. Schritt: CHIP an der Lötstelle ansetzen, zentrieren und anlöten (Fig. 4).
5. Schritt: Freie Seite löten. Nach dem Erkalten die erste Lötstelle nochmals nachlöten (Fig. 5).

## (I) Tecnica CHIP

### Saldatura e dissaldatura di componenti MOS

- Impiegare un saldatore a basso voltaggio con regolazione della temperatura.
- Temperatura del saldatore: ca. 240 °C (valore massimo 300 °C).
- Il tempo di saldatura deve essere il più breve possibile.
- Il componente CHIP deve rimanere nell'imballaggio originale fino al momento del suo impiego per evitare che le superfici di contatto si ossidino.
- Non toccare i componenti CHIP con mani nude.

### Dissaldatura di un CHIP

1. Aspirare i punti di saldatura del CHIP con una calza dissaldante (Fig. 1).
2. Riscaldare le superfici di contatto del CHIP risp. te tutto il CHIP e staccarlo con cautela. Attenzione a non esercitare for za per non danneggiare le piste sottostanti (Fig. 2).

**Attenzione!** **Non impiegare più il CHIP dissaldato, perchè il corpo elettrico può presentare delle rotture.**

### Saldatura di un CHIP

3. Pulire il punto dai residui di saldatura. Applicare una goccia di stagno (Fig. 3).
4. Appoggiare il CHIP sul punto di saldatura, centrarlo e quindi saldarlo (Fig. 4).
5. Saldare la superfici di contatto libera e, dopo che questa si è raffreddata, saldare nuovamente la superfici opposta (Fig. 5).

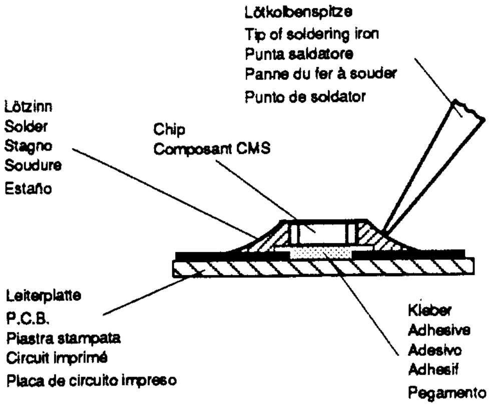


**Fig. 1**

## (GB) CHIP Technology

### Soldering and unsoldering of CHIP components

- Use only low-voltage soldering irons with temperature control.
- Permissible soldering temperatures are approx. 240 °C up to max. 300 °C.
- Keep the soldering period as short as possible.
- Keep the CHIP components in their original packages until they are used to avoid oxidation of the end contacts.
- Do not touch CHIP components with bare hands.

### Unsoldering of CHIP components

1. step: Clean the CHIP soldering point with a solder wick (Fig. 1).
2. step: Warm up the ends of the CHIP or the whole CHIP component and remove the CHIP from the adhesive by turning it without application of force so that the tracks beneath the CHIP do not break (Fig. 2).

**Attention!** **Do not use unsoldered CHIPS any more! The conductive layer may be broken.**

### Soldering of CHIP components

3. step: Remove possible residues from the soldering point. Then apply a solder bead (Fig. 3).
4. step: Put the CHIP onto the soldering point, then center and fix it (Fig. 4).
5. step: Solder the free end of the CHIP and resolder the first soldering point after it has cooled (Fig. 5).

## (F) Technologie CMS

### Soudure des composants CMS

- Utiliser exclusivement un fer à souder à basse tension et réglage thermique
- La température de soudure doit être de 240 °C environ (max. 300 °C).
- L'opération doit être très brève.
- Conserver les composants CMS dans leur emballage d'origine jusqu'au moment de leur utilisation, ceci pour éviter l'oxydation des contacts externes.
- Ne pas toucher les composants CMS à la main nue.

### Dessoudage des composants CMS

1. Aspirer la soudure du composant CMS à la l'aide de la tresse à souder (Fig. 1).
2. Chauffer légèrement les contacts externes du composant CMS ou le composant lui-même. Retirer ce dernier avec précaution en le tournant afin d'éviter un arrachement des circuits imprimés situés sous le composant (Fig. 2).

**Attention!** **Ne pas réutiliser les composants CMS, la face conductrice puovant être endomagée.**

### Soudure des composants CMS

3. Aspirer les restes de soudure sur le circuit. Poser une pointe de soudure (Fig. 3).
4. Poser le composant CMS sur cette pointe de soudure, centrer et souder. Maintenir le composant CMS à l'aide d'une pince brucelle (Fig. 4).
5. Effecteur la même opération pour l'autre coté. Terminer la première soudure (Fig. 5).

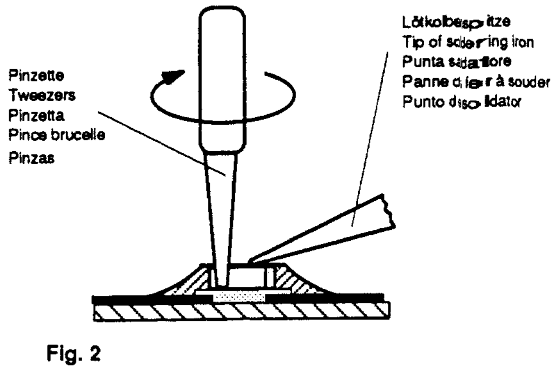


**Fig. 2**

## (E) Técnica de CHIP´s

### Soldaje y desoldaje de CHIP´s

- Emplear sólo un soldador de bajo voltaje con regulación de temperatura.
- La temperatura del soldador debe ser de aprox. 240 °C (máx. 300 °C).
- El tiempo de soldadura debe de ser lo más corto posible.
- Dejar los componentes CHIP hasta su montaje en el embalaje original. Con ello se evita la oxidación de los contactos frontales.
- No tocar con las manos los componentes CHIP.

### Desoldaje de un CHIP

| | |
|---|---|
| Primer paso: | Aspirar el estaño del punto de soldadura con un aspirador de los tipos de pera o de resorte (Fig. 1). |
| Segundo paso: | Calentar los extremos o todo el CHIP y girarlo con las pinzas. No hacer fuerza para que la placa de circuito impreso no resulte dañada. Cuidar de que las pistas situadas debajo del CHIP no se suelten de la placa, ya que éstas también están pegadas (Fig. 2). |

**Ciudado!** **No volver a utilizar el CHIP desoldado. La capa eléctrica puede estar interrumpida.**

### Soldadura de CHIP´s

| | |
|---|---|
| Tercer paso: | Limpiar el punto de soldadura de residuos de la soldadura anterior. Poner una gota de estaño (Fig. 3). |
| Cuarto paso: | Colocar el CHIP sobre la gota estaño, centrarlo y soldarlo (Fig. 4). |
| Quinto paso: | Soldar la parte libre y, después enfriarse, soldar también la parte opuesta (Fig. 5). |

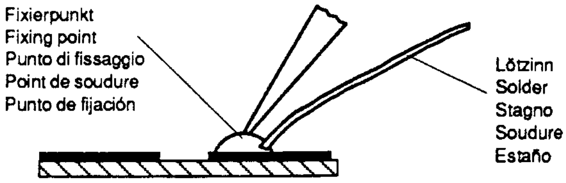


Fig. 3

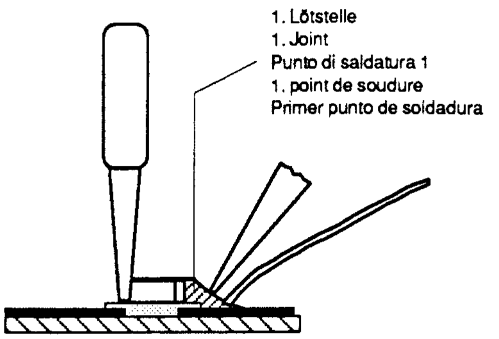


Fig. 4

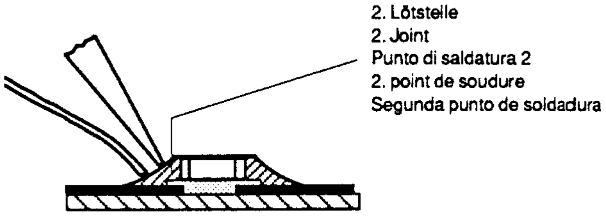


Fig. 5

## Sicherheitsvorschriften / Safety requirements / Prescrizioni de sicurezza / Prescriptions de securite / Recomendamos de seguridad

(D) **Achtung:** Bei Eingriffen ins Gerät sind die Sicherheitsvorschriften nach VDE 701 (reparaturbezogen) bzw. VDE 0860 / IEC 65 (gerätebezogen) zu beachten!

⚠ Bauteile nach IEC- bzw. VDE-Richtlinien ! Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!

**MOS** Vorschriften beim Umgang mit MOS - Bauteilen beachten!

(GB) **Attention:** Please observe the applicable safety requirements according to VDE 701 (concerning repairs) and VDE 0860 / IEC 65 (concerning type of product)!

⚠ Components to IEC or VDE guidelines! Only use components with the same specifications for replacement!

**MOS** Observe MOS components handling instructions when servicing!

(I) **Attenzione:** Osservarne le corrispondenti prescrizioni di sicurezza VDE 701 (concernente servizio) e VDE 0860 / IEC 65 (concernente il tipo di prodotto)!

⚠ Componenti secondo le norme VDE risp. te IEC! In caso di sostituzione impiegare solo componenti con le stesse caratteristiche.

**MOS** Osservare le relative prescrizioni durante, lavori con componenti MOS!

(F) **Attention:** Prière d'observer les prescriptions de sécurite VDE 701 (concernant les réparations) et VDE 0860 / IEC 65 (concernant le type de produit)!

⚠ Composants répondant aux normes VDE ou IEC. Les remplacer uniquement par des composants ayant les mêmes spécifications.

**MOS** Lors de la manipulation des circuits MOS, respecter les prescriptions MOS!

(E) **Atencion:** Recomendamos las normas de seguridad VDE u otras normas equivalentes, por ejemplo: VDE 701 para reparaciones, VDE 0860 / IEC 65 para aparatos!

⚠ Componentes que cumplen las normas VDE/IEC. En caso de sustitución, emplear componentes con idénticas especificaciones!

**MOS** Durante la reparacion observar las normas sobre componentes MOS!

D

## Sicherheitsbestimmungen

Nach Servicearbeiten ist bei Geräten der Schutzklasse II die Messung des Isolationswiderstandes und des Ableitstromes bei eingeschaltetem Gerät nach **VDE 0701 / Teil 200** bzw. der am Aufstellort geltenden Vorschrift, durchzuführen!
Dieses Gerät entspricht der Schutzklasse II, erkennbar durch das Symbol ▣.

**Messen des Isolationswiderstandes nach VDE 0701.**
Isolationsmesser ($U_{Test}$ = 500 V-) gleichzeitig an beiden Netzpolen und zwischen allen Gehäuse- oder Funktionsteilen (Antenne, Buchsen, Tasten, Zierteilen, Schrauben, usw.) aus Metall oder Metallegierungen anlegen. Fehlerfrei ist das Gerät bei einem:

$R_{isol} \geq 2$ MΩ bei $U_{Test}$ = 500 V-
Meßzeit: ≥ 1 s

**Anmerkung:** Bei Geräten der Schutzklasse II kann durch Entladungswiderstände der Meßwert des Isolationswiderstandes konstruktionsbedingt < 2 MΩ sein. In diesen Fällen ist die Ableitstrommessung maßgebend.

GB

## Safety Standard Compliance

After service work on a product conforming to the Safety Class II, the insulating resistance and the leakage current with the product switch on must be checked according to **VDE 0701** or to the specification valid at the installation location!
This product conforms to the Safety Class II, as identified by the symbol ▣.

**Measurement of the Insulation Resistance to VDE 0701**
Connect an Insulation Meter ($U_{Test}$ = 500 V-) to both mains poles simultaneously and between all cabinet or functional parts (antenna, sockets, buttons, decorative parts,etc.) made from metal or metal alloy. The product is fault free if

$R_{isol} \geq 2$ MΩ at $U_{Test}$ = 500 V-
Measuring time: ≥ 1s

**Comment:** On product conforming to the Safety class II the Insulation Resistance can be < 2 MOhm, dependent contructively on discharge resistors. In this cases, the check of the leakage current is significant.

I

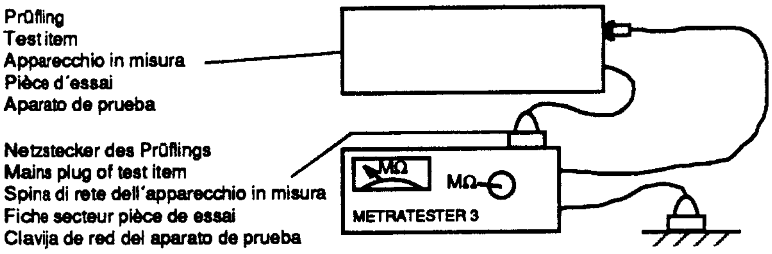
## Norme di sicurezza

Successivamente ai lavori di riparazione., negli apparecchi della classe di protezione. Il occorre effettuare la misura della resistenza di isolamento e della corrente di dispersione quando l'apparecchio e'acceso, secondo le norme **VDE 0701 / parte 200** e rispettivamente le norme locali!
Questo apparecchio corrisponde alla classe di protezione II ed è riconoscibile dal simbolo ▣

**Misura della resistenza di isolamento secondo VDE 0701**
Applicare il misuratore di isolamento ($tens._{prova}$ = 500V-) contemporaneamente ai due poli di rete e tra tutte le parti del mobile e delle funzioni (antenna, prese, tasti, mascherine, viti ecc.) in metallo o in lega metallica. L'apparecchio non presenta difetti quando:

$R_{isol} \geq 2$ MΩ con $tens._{prova}$ = 500 V-
Tempo di misura: ≥ 1s

**Nota:** Negli apparecchi della classe II, che per motivi costruttivi dispongono di resistenze di dispersione, il valore di misura della resistenza di isolamento può essere inferiore a < 2 MΩ. In questi casi è determinante la misura della corrente di dispersione.


Prüfling
Test item
Apparecchio in misura
Pièce d'essai
Aparato de prueba
Netzstecker des Prüflings
Mains plug of test item
Spina di rete dell'apparecchio in misura
Fiche secteur pièce de essai
Clavija de red del aparato de prueba
MΩ
MΩ
METRATESTER 3

Mit der Greifklemme alle Metallteile u. metallisierten Teile abtasten.
All metal and metalised parts must be tested with the Caliper clamp.
Con cavo provvisto di morsetto toccare tutte le parti metalliche o metallizzate.
A l'aide d'une pince vérifier toutes les parties métalliques ou métallisées.
Con la pinza, tocar todas las piezas metálicas o metalizadas.

Netzstecker/Mains plug/Spina di rete/Fiche secteur/Clavija de red

**Fig. 1**

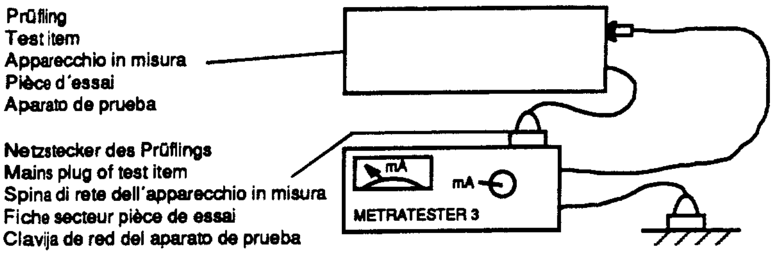
**Messen des Ableitstromes nach VDE 0701.**
Ableitstrommesser ($U_{Test}$ = 220 V~) gleichzeitig an beiden Netzpolen und zwischen allen Gehäuse- oder Funktionsteilen (Antenne, Buchsen, Tasten, Zierteilen, Schrauben, usw.) aus Metall oder Metallegierungen anlegen. Fehlerfrei ist das Gerät bei einem

$I_{Ableit} \leq 1$ mA bei $U_{Test}$ = 220V ~
Meßzeit ≥ 1 s

**Measurement of the Leakage Current to VDE 0701.**
Connect the Leakage Current Meter ($U_{Test}$ = 220V~) to both mains poles simultaneously and between all cabinet or functional parts (antenna, sockets, buttons, screws, etc.) made from metal or metal alloy. The product is fault free if $I_{Leak} \leq 1$mA at $U_{Test}$ = 220V ~
Measuring time: ≥ 1 s

**Misura della corrente di dispersione secondo VDE 0701**
Applic. il misuratore di isolamento($tens._{prova}$ = 220 V~) contemporaneamente ai due poli di rete e tra tutte le parti del mobile e delle funzioni ( antenna, prese, tasti, mascherine, viti ecc.) in metallo o in lega metallica. L'apparecchio non presenta difetti quando:

$I_{disp.} \leq 1$ mA con $tens._{prova}$ = 220 V~
Tempo di misura : ≥ 1 s


Prüfling
Test item
Apparecchio in misura
Pièce d'essai
Aparato de prueba
Netzstecker des Prüflings
Mains plug of test item
Spina di rete dell'apparecchio in misura
Fiche secteur pièce de essai
Clavija de red del aparato de prueba
mA
mA
METRATESTER 3

Mit der Greifklemme alle Metallteile u. metallisierten Teile abtasten.
All metal and metalised parts must be tested with the Caliper clamp.
Con cavo provvisto di morsetto toccare tutte le parti metalliche o metallizzate.
A l'aide d'une pince vérifier toutes les parties métalliques ou métallisées.
Con la pinza, tocar todas las piezas metálicas o metalizadas.

Netzstecker/Mains plug/Spina di rete/Fiche secteur/Clavija de red

**Fig. 2**

Wir empfehlen die Messungen mit dem **METRATESTER 3** durchzuführen. (Meßgerät zur Prüfung elektrischer Geräte nach VDE 0701).

Metrawatt GmbH
Geschäftsstelle Bayern
Triebstr. 44
D 8000 München 50

Ist die Sicherheit des Gerätes nicht gegeben, weil
- eine Instandsetzung unmöglich ist
- oder der Wunsch des Benützers besteht, die Instandsetzung nicht durchführen zu lassen,

so muß dem Betreiber die vom Gerät ausgehende Gefahr schriftlich mitgeteilt werden.

We recommend that the measurements are carried out using the **METRATESTER 3**. (Test equipment for checking electrical products to VDE 0701).

Metrawatt GmbH
Geschäftsstelle Bayern
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D 8000 München 50

If the safety of the product is not proved, because
- a repair and restoration is impossible
- or the request of the user is that the restoration is not to be carried out, the operator of the product must be warned of the danger by a written warning.

Si raccomanda di effettuare le misure con lo strumento **METRATESTER 3** (strumento di misura per il controllo di apparecchi elettrici secondo VDE 0701).

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Geschäftsstelle Bayern
Triebstr. 44
D 8000 München 50

Se la sicurezza dell'apparecchio non è raggiunta, perchè
- una riparazione non è possibile
- oppure è desiderio del cliente che una riparaz. non avvenga in questi casi si deve comunicare per iscritto all'utilizzat. la pericolosità dell'apparecchio riguardo il suo isolamento.

**Empfehlungen für den Servicefall**
- Nur Original-Ersatzteile verwenden.
- Bei Bauteilen oder Baugruppen mit der Sicherheitskennzeichnung ⚠ sind Original-Ersatzteile zwingend notwendig.
- Auf Sollwert der Sicherungen achten.
- Zur Sicherheit beitragende Teile des Gerätes dürfen weder beschädigt noch offensichtlich ungeeignet sein.
- Dies gilt besonders für Isolierungen und Isolierteile.
- Netzleitungen und Anschlußleitungen sind auf äußere Mängel vor dem Anschluß zu prüfen. Isolation prüfen!
- Die Funktionssicherheit der Zugentlastung und von Biegeschutz-Tüllen ist zu prüfen.
- Thermisch belastete Lötstellen absaugen und neu löten.
- Belüftungen frei lassen.

**Recommendation for service repairs**
- Use only original spare parts.
  With components or assemblies accompanied with the Safety Symbol ⚠ only original-spare parts are strictly to be used.
- Use only original fuse value.
- Safety compliance, parts of the product must not be visually damaged or unsuitable. This is valid especially for insulators and insulating parts.
- Mains leads and connecting leads should be checked for external damage before connection. Check the insulation!
- The functional safety of the tension relief and bending protection
  bushes are to be checked:
- Thermally loaded solder pads are to suck off and re-soldered.
- Ensure that the ventilation slots are not obstructed.

**Raccomandazione per il servizio assistenza**
- Impiegare solo componenti originali:
  I componenti o i gruppi di componenti contraddistinti dall'indicaz. ⚠ devono assolutamente venir sostituiti con parti originale.
- Osservare il valore nominale dei fusibili.
- I componenti che concorrono alla sicurezza dell'apparecchio non possono essere nè danneggiati nè risultare visibilmente inadatti. Questo vale soprattutto per isolamenti e parti isolate.
- I cavi di rete e di collegamento vanno controllati prima dell'utilizzo affinchè non presentino imperfezioni esteriori. Controllare l'isolamento.
- E'necessario controllare la sicurezza dei fermacavi e delle guaine flessibili.
- Saldature caricate termicam. vanno rifatte.
- Lasciare libere le fessure di areazione.

F

## Prescriptions de securite

Suite aux travaux de maintenance sur les appareils de la classe II, il convient de mesurer la résistance d'isolement et le courant de tuite sur l'appareil en état de marche, contormément á la norme **VDE 0701 §200**, ou selon les prescriptions en vigueur sur le lieu de tonctionnement de l'appareil!
Cet appareil est contorme aux prescriptions de sécurité classe II, signaléé par le symbole ▣ .

**Mesure de la resistance d'isolement selon VDE 0701**
Brancher un appareil de mesure d'isolaton ($U_{test}$ = 500 V-) simultanément sur les deux pôles secteur et entre toutes les parties métalliques ou métallisées accessibles de l'appareil (antenne, embases, touches, enjoliveurs, vis, etc. ).
Le tonctionnement est correct lorsque:

$R_{isol} \geq 2\ M\Omega$ pour une $U_{test}$ : 500V-
Durée de la mesure: ≥ 1s

**Observations:** L'isolation des appareils de la classe II, de part leur conception résistance de décharge), peut étre intérieur á 2 MΩ, (Fig. 1).

**Mesure du courant de fuite selon VDE 0701**
Brancher un ampèremètre du courant de fuite ($U_{test}$ = 220V~) simultanément sur les deux pôles du secteur et entre toutes les parties mètalliques ou mètallisèe accessibles de l'appareil (antenne, embases, touches, enjoliveurs, vis, etc.). Le tinctionnement est correct lorsque (Fig. 2): $I_{tuite} \leq 1mA$ pour $U_{test}$ : 200V~
Durée de la mesure ≥ 1 s.

Pour ces mesures, nous préconisons l'utilisation du **METRATESTOR 3** (instrument de mesure pour le contrôle d'appareils électriques conformes á la norme VDE 0701).

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Triebstr. 44
D 8000 München 50

Dans le cas où la sécurité de l'appareil nèst pas assurée pour les aisons suivantes:
- la remise en état est impossible
- l'utilisateur ne souhaite pas la remise en état de l'appareil. l'utilisateur doit être informé par écrit du danger que représente lùtilisation de l'appareil.

**Recommandations pour la maintenance**
- Utiliser exclusivement des piéces de rechange d'origine. Les composants et ensembles de composants signalés par le symbole ⚠ doivent être impérativement remplacés par des pièces d'origine.
- Respecter la valeur nominale des tusibles.
- Veiller au bon état et la conformité des pièces contribuant à la sécurité de tonctionnement de l'appareil. Ceci s'applique particuliérement aux isolements et pièces isolantes.
- Véritier le bon état extérieur des câbles secteur et des câbles de raccordement au point de vue isolement avant la mise sous tènsion.
- Véritier le bon état des protections de gaine.
- Nettoyer les soudures avant de les renouveler.
- Dégager les voies d'aération.

E

## Disposiciones para la seguridad

Después de operaciones de servicio en aparatos de la clase de proteccion II, se llevará a cabo la medida de la resistencia de aislamiento y de la corriente derivada, con el aparato conectado, de acuerdo con **VDE 0701** o de las disposiciones vigentes en el lugar de instalación.
Este aparato corresponde a la clase de protección II, reconocible por el símbolo ▣ .

Medida de la **resistencia de aislamiento** según **VDE 0701**. Aplicar el medidor de aislamiento ($U_{prueba}$ = 500 V-), simultáneamente, a los dos polos de red y entre todas las partes del mueble o de funciones ( antena, conectores, teclas, tornillos, etc.) de matal o aleaciones metálicas. El aparato estará libre de defectos con:

$R_{aisl} \geq 2\ M\Omega$ con $U_{prueba}$ = 500 V-
Tiempo de medida ≥ 1 seg.

**Observación:** En aparatos de la clase de protección II, condicionado por la construcción y por resistencias de descarga, el valor de medida de la resistencia de aislamiento puede ser superior a <2 MΩ. En este caso es decisiva la medida de la corriente derivada (Fig.1).

Medida de la **corriente derivada** de acuerdo con **VDE 0701**. Aplicar el medidor de corriente derivada ($U_{prueba}$ = 220 V~) simultáneamente a los dos polos de red y entre todas las partes del mueble o de funciones (antena, conectores, teclas, tornillos, etc.) de matal o aleaciones metálicas. El aparato estará libre de defectos con (Fig.2):

$I_{deriv} \leq 1$ mA con $U_{prueba}$ = 220 V~.
Tiempo de medida : ≥ 1 seg.

Aconsejamos llevar a cabo las medidas con el **METRATESTER 3** . (Instrumento de medida para la comprobación de aparatos eléctricos según VDE 0701).

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Triebstr. 44
D 8000 München 50

Si no se cumple la seguridad del aparato, poroue
- la puesta en orden es imposible, o
- esiste el desco del usuario de no realizarla, se ha de comunicar a quien lo haga funcionar, por escrito, del peligro dimanante del aparato.

**Recomendaciones para caso de servicio**
- Emplear sólo componentes originales.
  Con componentes o grupos constructivos con el indicativo de seguridad ⚠ son de obligada neccsidad piezas de repuesto originales.
- Las vartes del aparato que contribuyan a la seguridad del mismo no deben estar deterioradas ni ser manifiestamente inadecuadas.
  Esto es especialmente válido para aislamientos o piezas aislantes.
- Los cables de red y de conexión se comprobarán, antes de conectarlos, en cuanto a defectos externos. Comprobar el aislamiento.
- Se ha de comprobar la función de seguridad de la compensación de tiro o de los manguitos de protección contra doblamientos.
- Repasar los puntos de soldadura sometidos a carga térmica
- Mantener libres los canales aireación.

D

## Behandlung von MOS-Bauelementen

Schaltungen in MOS-Technik bedürfen besonderer Vorsichtsmaßnahmen gegenüber statischer Aufladung. Statische Aufladungen können an allen hochisolierenden Kunststoffen auftreten und auf den Menschen übertragen werden, wenn Kleidung und Schuhe aus synthetischem Material bestehen.
Schutzstrukturen an den Ein- und Ausgängen der MOS-Schaltungen geben wegen ihrer Ansprechzeit nur begrenzte Sicherheit.
Bitte beachten Sie folgende Regeln, um Bauelemente vor Beschädigung durch statische Aufladungen zu schützen:

1. MOS-Schaltungen sollen bis zur Verarbeitung in elektrisch leitenden Verpackungen verbleiben. Keinesfalls MOS-Bauteile in Styropor oder Plastikschienen lagern oder transportieren.
2. Personen müssen sich durch Berühren eines geerdeten Gegenstandes entladen, bevor sie MOS-Bauteile anfassen.
3. MOS-Bauelemente nur am Gehäuse anfassen, ohne die Anschlüsse zu berühren.
4. Prüfung und Bearbeitung nur an geerdeten Geräten vornehmen.
5. Lösen oder kontaktieren Sie MOS-ICs in Steckfassungen nicht unter Betriebsspannung.
6. Bei p-Kanal-MOS-Bauelementen dürfen keine positiven Spannungen (bezogen auf den Substratanschluß VSS) an die Schaltung gelangen.

### Lötvorschriften für MOS-Schaltungen:

- Nur netzgetrennte Niedervoltlötkolben verwenden.
- Maximale Lötzeit 5 Sekunden bei einer Lötkolbentemperatur von 300 °C bis 400 °C.

GB

## Handling of MOS Chip Components

MOS circuits require special attention with regard to static charges. Static charges may occur with any highly insulating plastics and can be transferred to persons wearing clothes and shoes made of synthetic materials.
Protective circuits on the inputs and outputs of MOS circuits give protection to a limited extent only due to the time of reaction.
Please observe the following instructions to protect the components against damages from static charges:

1. Keep MOS components in conductive packages until they are used. MOS components must never be stored or transported in Styropor materials or plastic magazines.
2. Persons have to rid themselves of electrostatic charges by touching a grounded object before handling MOS components.
3. Take the chip by the body without touching the terminals.
4. Use only grounded instruments for testing and processing purposes.
5. Remove or connect MOS ICs with in mounting sockets only if the operating voltage is disconnected.
6. The circuits of p-channel MOS components must not be connected to positive voltages (with reference to bulk VSS).

### MOS Soldering Instructions

- Use only mains isolated low-voltage soldering irons.
- Maximum soldering period 5 seconds at a soldering iron temperature of 300 to 400 degrees Celsius.

I

## Impiego dei componenti MOS

I circuiti in tecnica MOS necessitano di una particolare attenzione per evitare le scariche elettrostatiche.
Tutti i materiali sintetici ad alto potere isolante possono caricar si staticamente e queste cariche possono trasmettersi all'uomo, par ticolarmente se scarpe o vestiti sono sintetici.
Le strutture di sicurezza sull'ingresso e sull'uscita dei circuiti MOS hanno un'efficacia limitata a causa del loro periodo di intervento.
Per proteggere i componenti MOS dalle scariche elettrostatiche si consigla di adottare le seguenti precauzioni:

1. Fino al momento del loro impiego, i MOS devono restare in materiale elettricamente conduttivo. Non trasportarli o depositarli mai in listelli di plastica o in polistirolo.
2. Le persone che maneggiano i componenti MOS devona prima scaricar si elettrostaticamente toccando un oggetto con collegamento a massa.
3. Maneggiare i componenti MOS toccandone solo l'involucro e mai i piedini.
4. Controlli e lavorazioni devono avvenire soltanto su apparecchi con messa a terra.
5. Non inserire e non staccare mai gli integrati MOS dagli zoccoli quando la tensione di alimentazione è collegata.
6. Ai componenti MOS canale P non devono giungere tensioni positive (rif. a collegamento del substrato VSS).

### Norme di taratura per gli integrati MOS:

- Impiegare solo saldatori a bassa tensione con separazione dalla rete.
- Il tempo massimo di saldatura è di 5 sec. con una temperatura del saldatore compresa fra 300 °C e 400 °C.

F

## Précautions à prendre pour la manipulation des circuits MOS

Les circuits équipés en technique MOS exigent des précautions particulières contre les charges statiques.
Des charges statiques peuvent se creér sur toutes les matières synthétiques à fort pouvoir isolant, elles peuvent se transmettre au corps humain et le risque est d'autant plus important si la personne porte des vêtements ou des chaussures en matière synthétique.
Les systèmes de protection dont sont équipées les entrées et sorties des circuits MOS n'apportent qu'une sécurité limitée du fait de leur temps de fonctionnement.
Afin de protéger les composants contre les charges statiques, il est recommandé d'observer règles suivantes:

1. Les circuits MOS doivent rester placés dans un matériau conducteur jusqu'au moment de leur utilisation. Il ne doivent en aucun cas être stockés ou transportés dans du styropore ou sur des bandes de plastique.
2. Les personnes travaillant sur des circuits MOS doivent au préalable se décharger de leur charge statique en touchant un object mis à terre.
3. Les ensembles équipés de circuits MOS doivent être saisis uniquement par leur boîtier, on ne doit pas toucher les broches de raccordement.
4. On ne doit effectuer de contrôles et travaux que sur des appareils mis à la terre.
5. Ne jamais retirer ou raccorder un circuit MOS sur un appareil sous tension.
6. Les circuits MOS canal p ne doivent en aucun cas recevoir de tensions positives (en VSS par rapport à la liaison vers le substrat).

### Prescription de soudure sur les circuits MOS

- N'utiliser que des fers à souder basse tension isolés du secteur
- Temps de soudre maximum : 5 secondes pour une température comprise entre 300 °C et 400 °C.

E

## Tratamiento de componentes en técnica MOS

Los circuitos contruidos en técnica MOS precisan un cuidado especial contra las cargas estáticas.

En todos los materiales plásticos de elevado aislamiento pueden aparecer cargas estáticas y también ser transmitidas a la personas, especialmente cuando las ropas y zapatos son de materia sintética.

Las estructuras de protección en las entradas y salidas de los integrados MOS, debido a su tiempo de conexión, proporcionan sólo una limitada seguridad.

Para proteger los módulos de las descargas estáticas es aconsejable prestar atención a las siguientes reglas:

1. Los circuitos integrados MOS deben permanecer envueltos en un material conductor hasts el momento de su empleo. En ningún caso se les colocará ni transportará en recepientes de styropor o guías de plástico.
2. Las personas que trabajan con elementos MOS deben descargarse previamente tocando un objecto puesto a tierra.
3. Los elementos MOS sólo deben cogerse por la cápsula, sin rozar siquiera los terminales.
4. Pruebas y trabajos con los circuitos MOS sólo deben realizarse en aparatos que estén puestos a tierra.
5. No extraer ni establecer contacto bajo tensión de funcionamiento de los IC's MOS enchufables.
6. En los componentes MOS canal-p no deben llegar tensiones positivas (con respecto a la tensión de substrato VSS) a los circuitos.

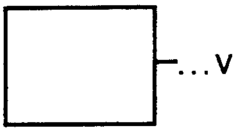
### Prescipciones para la soldadura de los circuitos integrados MOS:

- Utilizar únicamente soldadores de baja tensión con transformador-separador de la red.
- Tiempo máximo de soldadura: 5 segundos con una temperatura entre 300 y 400 °C.

## Hinweise zu den Oszillogrammen / Hints to the oscillograms / Note relative agli oscillogrammi / Indications pour les oscillogrammes / Observaciones con respecto a los oscilogramas

D GB I F E

Die Spannungswerte an den Oszillogrammen entsprechen Näherungswerten !
The voltages indicated in the oscillograms are approximates !
I valori delle tensioni indicati sugli oscillogrammi sono approssimativi !
Les valeurs de tension indiquées pour les oscillogrammes sont des valeurs approximatives!
Los valores de tensión en los oscilogramas son aproximados !



| | |
|---|---|
| . . . V | Gleichspannungswert / DC voltage / Valore tensione continua / Tension continue / Valor de tensión continua |
| . . . $V_{SS}$ | Spitze-Spitze - Wert / Peak to peak value / Valore picco-picco / Crête-crête / Valor pico a pico |
| . . . ms/cm | Zeitbasis des Oszilloskops / Time base of the oscilloscope / Base del tempo dell'oscilloscopio / Base de temps de l'oscilloscope/ Base de tiempo del oscilocopio |
| . . . Hz | Frequenz / Frequency / Frequenza / Fréquence / Frecuencia |

## Code zur Farbkennzeichnung / Code for designation of colours / Codice a colore / Code de désignation de couleurs / Codigo de colores

**DIN IEC 757**

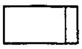
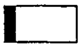
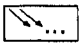
D GB I F E

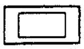
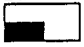
| | |
|---|---|
| BK | Schwarz / Black / Nero / Noir / Negro |
| BN | Braun / Brown / Bruno / Brun / Marron |
| RD | Rot / Red / Rosso / Rouge / Rojo |
| OG | Orange / Orange / Arancione / Orange / Naranjo |
| YE | Gelb / Yellow / Giallo / Jaune / Amarillo |
| GN | Grün / Green / Verde / Vert / Verde |
| BU | Blau / Blue / Blu / Bleu / Azul |
| VT | Violett / Violet / Violetto / Violet / Violeto |
| GY | Grau / Grey / Grigio / Gris |
| WH | Weiß / White / Bianco / Blanc / Blanco |
| PK | Rosa / Pink / Rosa / Rose / Rosa |
| GD | Gold / Gold / Dorato / Doré / Oro |
| TQ | Türkis / Turquoise / Turchese / Turquoise / Turquis |
| SR | Silber / Silver / Argenteo / Argentin / Plata |

# Schaltplansymbole / Circuit diagram symbols / Symboles schema / Simboli sullo schema Simbolos en los esquemas

(D) (GB) (F) (I) (E)

Schaltplansymbole für Video-/Chromasignale und Statusbefehle.
Circuit diagram symbols for video signals, chroma signals and status commands.
Symboles schema pour video / chroma et status de commandes.
Simboli per segnali video, chroma e situazioni di comando.
Simbolos de senales de video y croma de los status de mando.

| | |
|---|---|
| | Unterschiedliche Signale auf einer Leitung/Various signals on one lead/Signaux different sur le même cable/Segnali differenti su una linea/Senales differentes en lu conduccion: |
|  | –Aufnahme/Record/Enregistrement/Registrazione/Grabacion |
|  | –Wiedergabe/Playback/Reproduction/Reproduzione/Reproduccion |
| U TUN.<br>UST 0 - 9V | Abstimmspannung / Tuning voltage / Tension d´accord / Tensione di sintonia / Tension de sintonia |
|  | Optokopplerimpulse / Optocoupler pulses / Impulsions tachymetriques / Impulsi optoaccoppiatore / Impulsos tacometricos |
| U LP | Longplay-Umschaltung / Longplay switch over / Commutation longue duree / Commutazione longplay / Commutacion a longplay |
| U BZ | Bandzug-Spannung / Tape tension voltage / Tension de bande / Tensione nastro / Tension de cinta |
| U AUFN<br>U AUFN | Aufnahme-Status / Record status / Status enregistrement Stato di registrazione / Status de grabacion |
| U AHF | HF- Aufnahmespannung / RF record voltage / Tension d´enregistrement HF / Tensione di registrazione HF / Status de grabacion RF |
| U PB | Wiedergabe-Status / Playback status / Status reproduction / Status reproduzione / Status reproduccion |
| U RE | RE-Status / RE status / Status RE / Stato RE / Status RE |
| U TEST | Schaltspannung für Testbildgenerator / Switching voltage for test pattern generator / Tension de commutation mire / Tensione di commutazione per generatore di prova / Activacion del generador de prueba |
| U PAY-TV | Pay-TV-Schaltspannung / Pay TV switching voltage / Tension de consommation/tele a peage / Tensione di commutazione TV a pagamento / conmutacion a TV de peaje |
| RESET | Reset-Impuls / Reset pulse / Impulsion de reset / Impulso reset / Impulso de reset |
| U BSL | Regelumschaltung bei BSL / Control switching during picture search / Tension de commutation en recherche visuelle / Tensione di regolazione durante la ricerca immagine / Conmutacion a busqueda de imagen |
| U BD III | BD. III-Umschaltung / BD. III switch-over / Commutation bande III / Commutazione banda III /Conmutacion banda III |
| U I/III | BD. I / III-Umschaltung / BD. I / III switch-over / Commutation bande I / III /Commutazione banda I / III Conmutacion banda I / III |
| U VHF | VHF-Umschaltung / VHF switch-over / Commutation VHF / Commutazione VHF / Conmutacion banda VHF |
| U UHF | UHF-Umschaltung / UHF switch-over / Commutation UHF / Commutazione UHF / Conmutacion banda UHF |
| HF AV | HF / AV-Umschaltung /RF / AV switch-over / Commutation HF / AV / Commutazione HF / AV / Conmutacion banda HF / AV |
| U AV<br>U EURO-AV | AV-Schaltspannung / AV switching voltage / Tension de commutation AV / Tensione di commutazione AV / Tension de conmutacion AV |
| U AFB | Schaltspannung bei Aufnahme / Switching voltage for record / Tension de commutation en enregistrement / Tensione commut. in registrazione / Tension de conmutacion en grabacion |

| | |
|---|---|
| U HEIM | Heimlauf / Automatic unthread on switch off / Degament auto. par inter M/A / Sgancio autom. con spegnimento / Desenhebrado preventivo |
| U FKT | Funktion-Ein-Status / Function "ON" status / Statut marche / Funzione inserita / Activacion tension |
| BE BA | Bandanfang-/Bandende-Kennung / Tape start/tape end detection Identification debut/fin de bande / Identificazione inizio/fine nastro/ Identification de principio o fin de cinta |
| F1 | Heizung F1/ Filament F1 / Filamento F1 |
| F2 | Heizung F2 / Filament F2 / Filamento F2 |
| U WM1 | Steuerspannung Wickelmotor 1 / Control voltage, winding motor 1 Tension de commande moteur 1 / Tensione di comando motore avvolgimento 1 / Tension de mando del motor 1 |
| U WM2 | Steuerspannung Wickelmotor 2 / Control voltage, winding motor 2 Tension de commande moteur 2 / Tensione di comando motore avvolgimento 2 / Tension de mando del motor 2 |
| DATA | Datenleitung/ Data line / Ligne de donnes / Linea dati/ Linea datos |
| CLOCK<br>CLK | Clockleitung / Clock line / Ligne horloge / Linea clock / Linea reloj |
| SDA | $I^2C$-Bus-Datenleitung / $I^2C$ Bus data line / Ligne de donnes Bus $I^2C$ / Linea dati $I^2C$-Bus / Linea datos del Bus $I^2C$ |
| SCL | $I^2C$-Bus-Clockleitung / $I^2C$ Bus clock line / Ligne horloge Bus $I^2C$ Linea clock $I^2C$-Bus / Linea reloj del Bus $I^2C$ |
| U VPS VT | Status VPS/Videotext / Status VPS/Teletexte / Stato VPS/Televideo / Status VPS/Teletexto |
| U EINF. | Einfädeln / Threading / Engagement de bande / Caricamento del nastro / Enhebrado |
| U AUSF | Ausfädeln / Unthreading / Degagement de bande / Scaricamento del nastro / Desenhebrado |
| $\overline{\text{DS}}$ | Drum Stop-Pegel / Drum Stop Status / Niveau (tambour de tete arrete) / Livello stop tamburo / Nivel de detención del tambor |
| STROBE | Strobe |
| B | Blau / Blue / Bleu / Blu / Azul |
| R | Rot / Red / Rouge / Rosso / Rojo |
| G | Grün / Green / Vert / Verde |
| BA | Bandanfang / Start of tape / Debut de bande / Inizio nastro / Principio de cinta |
| BE | Bandende / End of tape / Fin de bande / Fine nastro/ Final de cinta |
| U WR-V<br>U WR-V | Bild-WR-Status / Video WR status / Status WR Video( enregistrement/lecture) / Stato Video / Status grabacion/reproduccion Video |
| U NORM | Normumschaltung / Standard switch - over / Commutation norme / Commutazione de norma / Conmutacion de norma |
| HI - B | Kopfumschaltimpuls-Bild / Video head switching pulse / Impulsion de commutation tete image / Impulso di commutazione testina video / Conmutacion de cabezas de video |
| SP | Standbild / Still picture / Arrêt sur image / Fermo immagine / Imagen parada |
| ACL | Auslesetakt/Read out clock/Frequence de echantillonage/ Cadenza di analisi Frecuencia de lectura |
|  | Rahmen/Frame/Cadre/Cornice/Marco |
| PIP<br> | Bild im Bild/Picture in picture/Image en image/Immagine nell´immagine/Imagen en imagen |

| | |
|---|---|
| U CM | Steuerspannung Capstanmotor / Control voltage, capstan motor / Tension de commande moteur cabestan / Tensione di comando motore capstan / Tension de mando del motor del capstan |
| U KM<br>U KM | Steuerspannung Kopfradmotor/Control voltage, headwheel motor Tension de commande moteur tambour de têtes / Tensione di comando motore ruota testine / Tension de mando del motor del volante de cabezas |
| FM - B | FM-Bild / FM picture / Image - FM / Immagine FM / FM de imagen |
| U BS | Bildspeicher-Status / Field Memory Status / Status mémoire images / Status memoria immagine / Status memoria de imagen |
| Y<br>Y | Y-Eintastung / Y insertion / Insertion Y / Inserimento Y / Insercion Y |
| V | V-Eintastung / V insertion / Insertion V / Inserimento V / Insercion V |
| U KOIN. | Koinzidenz-Spannung / Coincidence voltage / Tension de coincidence / Tensione di coincidenza / Tension de coincidencia |
| U V | Freigabe für V-Eintastung / Field insertion enable / Validation impulsion V / Consenso per inserimento V / Habilitacion insercion V |
| U DOK | Dropout-Killerspannung / Dropout Killer Voltage / Tension de commutation dropout / Tensione di soppressione dropout / Tension de conmutacion dropout |
| U DOA | Dropout-Abschwächung / Dropout attenuation / Attenuation dropout / Attenuazione dropout / Atenuacion dropout |
| ZF | ZF-Signal / IF signal / Signal FI / Segnale FI / Senal de FI |
| FBAS | FBAS-Signal / CCVS signal / Signal Video-composite / Segnale FBAS (Video composito) / Senal completa de Videocolor |
| BAS | BAS-Signal / CVS signal / Signal Video / Segnale BAS (Video) / Senal completa de Video |
| B | Bildimpuls / Field pulse / Impulsion trame / Impulso di quadro / Impulsos de cuadro |
| SYN.GEM. | Synchrongemisch / Mixed sync. / Signeaux synchro / Sincronismo O/V / Sincronismos H / V |
| 627 kHz | 627 kHz-Signal (PAL) / 627 kHz Signal (PAL) / Signal 627 kHz (PAL) / Segnale a 627 kHz (PAL) / Senal de 627 kHz (PAL) |
| 1.1 MHz | 1,1 MHz-Signal (SECAM) / 1.1 MHz Signal (SECAM) / Signal 1,1 MHz (SECAM) / Segnale a 1,1 MHz (SECAM) / Senal de 1,1 MHz (SECAM) |
| F | Farbsignal / Chroma signal / Signal chroma / Segnale croma / Senal de croma |
| BK | Burst-Key-Impuls / Burst Key pulse / Impulsion Burst-Key / Impulso Burst-Key / Impulsos de puerta de Burst |
| U H<br>H | Zeilen-Eintastung / Line insertion / Insertion ligne / Inserimento di riga / Insercion de linea |
| CTL<br>SYN | Synchronimpuls / Sync pulse / Impulsion Synchro / Impulso di sincronismo / Impulsos de sincronismo |
| U PAL | PAL / $\overline{\text{NTSC}}$ |
| U FMBK | FM-Bild-Kennung / FM picture identification / Identification Video/FM / Identificazione Video/FM / Identificacion FM imagen |
| AM FM<br>FM AM | AM/FM-Umschaltung / AM/FM switch over / Commutation AM/FM Commutazione AM/FM / Conmutacion AM/FM |
| ⊥ | Masse / Chassis / Massa / Masa |
| * ⊥ | Separate Masse / Separate chassis connection / Connection de masse separee / Massa separata / Conexion de masa separada |
| SCK | Serielle Clockleitung / Serial clock line / Ligne horlage serielle / Linea clock seriale / Linea serie de reloj |
| SO | Serielle Datenausgabe / Serial data output / Sortie serielle de donnes / Uscita dati seriali / Salida serie de datos |
| SI | Serielle Dateneingabe / Serial data input / Entree serielle de donnes / Ingresso dati seriali / Entrada serie de datos |

| | |
|---|---|
| UE | Datenübernahmeleitung / Data transfer line / Ligne echange de donnes / Linea di transferimento dati / Linea transferencia datos |
| $2F_{SC}$ | Doppelte Hilfsträgerfrequenz / Double subcarrier frequency / Frequence double de la sous-porteus / Frequenza portante ausil. doppia / Doble frecuencia de portadora auxiliar |
| U DOS | DOS |
| WDG | Wiedergabe/Playback/Reproduction/Riproduzione/Reproduccion |
| CAM | Camera |

## Schaltplansymbole für Audiosignale-Statusbefehle
## Circuit diagram symbols for Audio signals / Status commands
## Symboles sur schema pour commandes de statut Audio
## Simboli di comando Audio
## Simbolos de las senales de Audio y status de mando

| | |
|---|---|
| AUDIO | Audiosignal, Mono / Audio signal, Mono / Signal Audio, Mono / Segnale Audio, Mono / Senal de Audio, Mono |
| AUDIO-L | Audiosignal, links / Audio signal, left / Signal Audio, gauche / Segnale Audio, sinistro / Senal de Audio, izquierda |
| AUDIO-R | Audiosignal, rechts / Audio signal, right / Signal Audio, droit / Segnale Audio, destro / Senal de Audio, derecha |
| FM-TON | FM-Ton / FM sound / Son FM / Audio FM / Sonido FM |
| U FR I<br>U FR I | Frankreich Band I / France band I / France bande I / Francia banda I / Banda I Francesa |
| HIFI-R | HIFI-Ton rechts / HIFI sound right / Son HIFI droit / Audio HIFI destro / Sonido HIFI derecha |
| HIFI-L | HIFI-Ton links / HIFI sound left / Son HIFI gauche / Audio HIFI sinistro / Sonido HIFI izquierda |
| U WR-A<br>U WR-A | Ton-WR-Status / Sound WR status / Statut WR Audio (enregistrement/lecture) / Stato Audio WR / Status Grabacion/reproduccion sonido |
| HI-TON | Kopfumschaltimpuls-Ton / Sound head switching pulse / Impulsion de commutation tete/son / Impulso di commutazione testina Audio / Conmutacion cabecas de sonido |
| U CH 2<br>U CH 1 | Status Tonkanal 1, 2/ Sound channel 1, 2 status / Statut canal 1, 2 Stato canale Audio 1, 2 / Status canal 1, 2 sonido dual |
| CH1/CH2 STEREO | Kanal 1, Kanal 2, Stereo / Channel 1,channel 2, Stereo / Canal 1, canal 2, Stereo / Canale 1, canale 2, Stereo |
| ○ | Mikrofon-Eingang / Microphone input / Entree micro / Ingresso microfono / Entrada microfono |
| U FMTK | FM-Ton-Kennung / FM sound identification / Identification Audio FM / Identificazione Audio FM / Identificacion sonido FM |
| U AFMT | Status f. Aufn. FM-Ton / FM sound record status / Statut pour enregistrement son FM / Stato di registrazione Audio FM / Status grabacion sonido FM |
| TL | Tonlöscher / Sound erase/ Effacement son / Cancellazione Audio / Borrado sonido |
| HL | Hauptlöscher / Full-track erase / Tete d'effacement pleine piste / cancellazione completa / Borrado total |
| U AUTOM.<br>U AUTOM. | Automatik/Manuell-Umschaltung / Automatic/manuel switch-over Commutation automatique/manuel / Commutazione automatica/ manuale / Conmutacion automatico/manual |
| U FM-A | FM-Ton-Status / FM sound status / Statut Audio FM / Stato Audio FM / Status sonido FM |
| U 2-TON | Zwei-Ton-Status / 2-channel sound status / Statut double son / Stato doppio Audio / Status sonido dual |
| U MUTE<br>U MUTE | Stummschaltung / Muting / Circuit de silence / Silenziamento / Silenciador |

| | |
|---|---|
| U MUTE PERI | Stummschaltung Ton EURO-AV / Muting sound EURO-AV / Circuit silence son EURO-AV / Silenziamento audio EURO-AV / Silenciador sonido EURO-AV |
| U MV | Microvertonung / Microphone dubbing / Sonorisation micro / Doppiaggio con microfono / Sonorizacion micro |
| U NV<br>U NV | Nachvertonung/ Dubbing / Postsonorisation / Postsonorizzazione / Sonorizacion posterior |
| U TRICK | Status Trick/Function truqage/Situaz. effetto speciale/Status truco |
| Control | Ansteuerung Eingangswahlschalter / Control input select switch / Commande de sélecteur entrand / Selettore ingresso pilotagio / Exitación del selector de entradas |
| U τ | Verzögerte Regelspannung / Delayed control voltage / Tension de regulation retardee / Tensione di regolazione ritardata / Tension diferida de cag |
| A | Audio-Aufnahme-Signal z. A/W-Kopf / Audio record signal to R/P head / Tete Audio/mode d'enregistrement / Registrazione Audio segnale alla testina R/A / Grabacion (cabeza de Audio) |
| W | Audio-Wiedergabe-Signal v. A/W-Kopf / Audio playback signal from R/P head / Tete Audio/mode lecture / Riproduzione Audio segnale dalla testina R/A / Reproduccion (cabeza de Audio) |
| \|←○→\| | Nullpunkt-Einstellung der Audio-Anzeige / Zero adjustment of audio indicator / Point zéro affichage audio / Regolazione zero dell'indicazione Audio / Punto cero indicador de audio |
| R | Aufnahme-Empfindlichkeit, rechter Kanal / Record sensitivity, right channel / Niveau d'enregistrement, canal droit / Sensibilita de registrazione, canale destra / Nivel grabacion, canal derecho |
| L | Aufnahme-Empfindlichkeit, linker Kanal / Record sensitivity, left channel / Niveau d'enregistrement, canal gauche / Sensibilita de registrazione, canale sinistro / Nivel grabacion, canal izquierdo |
| R | Meßwertanzeige, analog rechts / Meter reading, analog right / Indicateur de modulation analogique, droit / Indicazione valore di misura analogico, destra / Indicador de nivel, derecho |
| L | Meßwertanzeige, analog links / Meter reading, analog left / Indicateur de modulation analogique, gauche / Indicazione valore di misura analogico, sinistro / Indicador de nivel izquierdo |
| U FMHT | FM Hüllkurve Ton / FM envelope, sound / Courbe envelopante audio FM / Curva d'inviluppo FM audio / FM-curva envolvente de sonido |
| U +5V W<br>U +5V W | Wiedergabe-Status / Playback status / Status reproduction / Stato riproduzione / Status reproduccion |
| OE | Ausgangsfreigabe/ Output enable/ Validation sortie/ Consenso di uscita/ Habilitación salida |
| WR | WR-Status/ WR status/ Statuts WR/ Stato WR/ Status WR |
| WT 1 | Tacho Wickelteller links / Tacho generator, left spindle / Générateur tachymétrique du plateau porte-bobine gauche / Piattello avvolg.tachim.sinistro / Tacometro del portacarrete izquierdo |
| WT 2 | Tacho Wickelteller rechts / Tacho generator, right spindle / Générateur tachymétrique du plateau porte-bobine droit / Piattello avvolg.tachim.destro / Tacometro del portacarrete derecho |
| SECAM | Secam |
| U CR | Stellerspannung Crispening / Threshold Voltage Crispening / Tension de réglage contours / Tensione Crispening / Tensión rep. "crispening" |
| BLANK | Signalaustastung / Signal Blanking / Suppression du signal / Sopressione segnale / Supresión de señal |
| U SVHS -HB | FM-Hüllkurve Bild S-VHS / FM Envelope Video S-VHS / Envelope FM image S-VHS / Inviluppo video FM S-VHS / Envolvente de FM de imagen (S-VHS) |
| U VHS -HB | FM-Hüllkurve Bild VHS / FM Envelope Video VHS / Envelope FM image VHS / Inviluppo video FM VHS / Envolvente de FM de imagen (VHS) |
| NORM. | Normalton / Normal Sound / Son normal / Audio normale / Sonido normal |
| NICAM | Nicam |
| REC PB<br>U W A | Aufnahme/Wiedergabe-Umschaltung / Record/playback switching / Commutation enregistrement/lecture / Commutaz. registrazione/ riproduzione / Conmutación grab/repro |
| U HL<br>U HL | Status Hauptlöscher / Status Mains Erase System / Etat effacem. principal / Stato cancellatore totale / "Status" de borrado total |
| U TL | Status Tonlöscher / Status Sound Erase / Etat effacem. audio / Stato cancellatore audio / "Status" de borrado de sonido |
| U W/T-M | Wiedergabe Trick-Mix / Switching Voltage Playback Trick-Mix / Tension de commutation lecture Trick mix / Tens. commut. riprod.Trick-Mix / Tensón conm. repro/trick-mix |
| U S-VHS VHS | VHS / S-VHS Umschaltung / VHS/S-VHS Switching / Commutation VHS / S-VHS / Commutatione VHS / S-VHS / Conmutación VHS / S-VHS |
| MIX | Schaltspannung Mix-Betrieb / Switching Voltage Mix-Mode / Tension de commutation fonction mix / Tens. commut. funzionam. Mix / Tensión conm. modo MIX |
| U LM | Stellerspannung "Master"-Pegel / Threshold Voltage "Master"-Level/ Tension de réglage du niveau "master" / Tensione livello "Master" / Tensión para nivel MASTER |
| U LO | Stellerspannung Ausgangspegel / Threshold Voltage Output Level / Tension de réglage niveau de sortie / Tensione livello s'uscita / Tensión reg. nivel de salida |
| U COL S-W | Schwarz/Weiß-Farbe Schaltspannung/ Black/White-Colour Switching Voltage/ Tension de commutation noir/blanc-color/ Tens. commut. bianco/nero-colore/ Tensión de conm. b/n-colore |
| U SW | Schwarz/Weiß-Schaltspannung/ Black/White-Switching Voltage/ Tension de commutation noir/blanc/ Tens. commut. bianco/nero/ Tensión de conm. b/n |
| U CP<br>U CP | Canal Plus |

## Schalter - und Buchsensymbole / Switch and socket symbols / Symboles embases et commutateurs / Simboli prese e commutatori Simbolos para commutadores y conectores

| | |
|---|---|
| ● ⏻ | Ein-/Ausschalter ● EIN ⏻ AUS / On/Off switch ● ON ⏻ OFF / Commutateur marche/arrêt ● Marche ⏻ Arrêt / Interruttore accesione ● e spegnimento ⏻ / Interruptor de marcha/paro Marcha ● Paro ⏻ |
| | Fernbedienung (s-Buchse) / Remote control socket/ Embase télécommande / Presa di telecomando / Conector telemando |
| | Kopfhörer (-Buchse) / Headphone socket / Embase écouteur / Presa per cuffia / Conector Auriculares |
| ○ | Mikrofon / Microphone / Embase micro / Microfono / Conector microfono |
| | Tonauswahlschalter/ Sound Select Switch/ Sélecteur Audio/ Commutatore audio/ Selector de sonido |
| | Eingangs-Buchse/ Input socket/ Prise d'entrée/ Presa d'ingresso/ Conector de entrada |
| | Ausgangs-Buchse/ Output socket/ Prise de sortie/ Presa d'uscita/ Conector de salida |

## Schalterbezeichnungen / Switch designations / Désignation des contacts / Denominazioni degli interruttori / Denominacion de contactos

| | |
|---|---|
| CL 1/CL 2 | Cassettenladekontakte / Cassette loading contacts / Contacts de positionnement logement cassette / Contatti caricamento cassetta Contactos del portacassette |
| FA 1 | Zählschalter / Counter switch / Contact de comptage / Interruttore di conteggio / Contacto contador |
| FA 2 | Cassettenschachtkontakt / Cassette compartment switch / Contact logement cassette / Contatto vano cassetta / Posición del portacassetta |
| AS | Aufnahmesperre / Record lock / Sécurité d'enregistrement / Blocco di registrazione / Bloqueo de grabacion |
| FB | Identifikationsschalter / Identification switch / Commutateur d'identification / Interruttore di identificazione / Contacto identificacion |

## Kopfbezeichnungen / Head designations / Désignation des têtes / Denominazione delle testine / Abreviaturas de las cabezas

| | |
|---|---|
| AW | Aufnahme-/Wiedergabekopf / Record/playback head / Tête combinée enregistrement/lecture / Testina di registrazione/riproduzione |
| CTL | Synchronkopf / Sync head / Tête synchro / Testina di sincronismo / Cabeza de sincronismo |
| TL | Tonlöschkopf / Sound erase head / Tête d'éffacement son / Testina di cancellazione audio / Cabeza de borrado de sonido |
| HL | Hauptlöschkopf/ Full-track erase head / Tête d'éffacement pleine piste / Testina de cancellazione completa / Cabeza de borrado total |

## Motorenabkürzungen / Motor abbreviations / Abréviations moteurs / Abbreviazioni dei motori / Abreviaturas de los motores

| | |
|---|---|
| WM 1 | Wickelmotor 1 / Winding motor 1 / Moteur bobinage 1 / Motore de avvolgimento 1 / Motor 1 de bobinado |
| WM2 | Wickelmotor 2 / LWinding motor 2 / Moteur bobinage 2 / Motore de avvolgimento 2 / Motor 2 de bobinado |
| KM | Kopfradmotor / Headwheel motor / Moteur tambour de têtes / Motore ruota testine / Motor del volante de cabezas |
| FM | Fädelmotor / Threading motor / Moteur engagement-dégagement Motore di caricamento-scaricamento nastro / Motor de enhebrado-desenhebrado |
| CM | Capstanmotor / Capstan motor / Moteur cabestan / Motore capstan / Motor del capstan |

## Sensoren-Abkürzungen / Sensor abbreviations / Abréviations de détecteurs / Abbreviazioni usate per i sensori / Abreviaturas empleadas para sensores

| | |
|---|---|
| WM 1 | Tacho-WM1 / Tacho generator, winding motor 1 / Générateur tachymétrique du moteur bobinage 1/ Motore avvolgimento tachim. 1/ Taco metro del motor de bobinado 1 |
| WM 2 | Tacho-WM 2 / Tacho generator, winding motor 2 / Générateur tachymétrique du moteur bobinage 2 / Motore avvolgimento tachim. 2 / Tacometro del motor de bobinado 2 |
| WT 1 | Tacho Wickelteller links / Tacho generator, left spindle / Générateur tachymétrique du plateau porte-bobine gauche / Piattello avvolg.tachim.sinistro / Tacometro del portacarrete izquierdo |
| WT 2 | Tacho Wickelteller rechts / Tacho generator, right spindle / Générateur tachymétrique du plateau porte-bobine droit / Piattello avvolg.tachim.destro / Tacometro del portacarrete derecho |
| LG | Kopfrad-Lagengeber / Headwheel optocoupler / Opto-coupleur tambour de tête / Datore posizione ruota testine / Tacometro del volante de cabezas |
| BA | Bandanfang / Start of tape / Debut de bande / Inizio nastro / Principio de cinta |
| BE | Bandende / End of tape / Fin de bande / Fine nastro / Final de cinta |
| CT | Capstan Tacho / Capstan tacho / Générateur tachymétrique du cabestan / Tachimetro capstan / Tacometro del capstan |

## Spannungen-Abkürzungen / Voltage abbreviations / Abréviation des tensions / Abbreviaz. delle tensioni / Abreviaturas de las tensiones

| | |
|---|---|
| ...$V_D$ | Dauerspannung / Unswitched voltage / Tension permanente / Tensione permanente / Tension permanente |
| ...$V_{DM}$ | Dauer-Motor-Spannung / Unswitched motor voltage / Tension permanente moteur / Tensione permanente motore / Tension permanente motor |
| ...$+V_A$ | Aufnahmespannung / Record voltage / Tension d'enregistrement / Tensione di registrazione / Tension en grabacion |
| ...$+V_W$ | Wiedergabespannung / Playback voltage / Tension lecture / Tensione di riproduzione / Tension en reproduccion |
| ...$V_F$ | Funktionspannung / Function voltage / Tension de fonctionnement/ Tensione de regime / Tension funciones |
| ...$V_{AHF}$ | HF- Aufnahmespannung / RF record voltage / Tension d´enregistrement HF / Tensione di registrazione HF / Status de grabacion RF |
| ...$V_{D\,UHR}$ | Dauer-Uhr-Spannung / Unswitched clock voltage / Tension permanente horloge / Tensione permanente orologio / Tension permanente reloj |
| ...$V_E$ | EIN-Spannung /Ein-/Ausschalter gedrückt) / " Machine-on" voltage (ON/OFF switch pressed) / Tension de marche (touche M/A enclenchée) / Tensione d'accensione ( interr. accens./spegn. premuto) / Tension "En Marcha" (interruptor pulsado) |
| ...$V_B$ | Buchsenspannung / Socket voltage / Tension embase / Tensione presa / Tension en conector |

## Bausteine-Abkürzungen mit Kontaktbelegung / Circuit board abbreviations with contact layout / Abréviation des modules avec affectation des contacts / Abbreviazione dei moduli con specifica dei contatti / Abreviaturas de los modulos con no de terminal

| | |
|---|---|
| AS... | Ablaufsteuerung / Sequence control / Module de procédure / Comando funzioni / Proceso de funciones |
| CH... | Chroma-Baustein-Kontakt / Chroma board contact / Contact module chroma / Contatto modulo chroma / Chroma |
| V... | Video-Baustein-Kontakt / Video board contact / Contact module video / Contatto modulo video / Video |
| BE... | Bedien-Einheit-Kontakt / Keyboard unit contact / Contact module de commande / Contatto unita di comando / Unidad de mando |
| NT... | Netzteil / Power supply / Alimention / Alimentatore / Alimentacion |
| ZF... | ZF-Baustein-Kontakt / IF board contact / Contact module FI / Contatto modulo FI / FI |
| T... | Tuner-Kontakt / Tuner contact / Contact tuner / Contatto tuner / Sintonizador |
| M... | Modulator-Kontakt / Modulator contact / Contact modulateur / Contatto modulatore / Modulador |
| BEZ... | Bedien-Zusatzplatte / Keyboard subpanel / Module de commande supplémentaire / Piastra suppl. di comando / Placa adicional unidad de mando |
| KH... | Kopfhörerverstärker / Headphone amplifier / Ampli casque / Amplificatore cuffia / Amplificador auriculares |
| KB... | Kopfverstärker - Bild / Video head amplifier / Ampli têtes video / Amplificatore testina video / Amplificador cabezas de video |
| KT... | Kopfverstärker - Ton / Audio head amplifier / Ampli têtes audio / Amplificatore testina audio / Amplificador cabezas de sonido |
| HIFI... | HiFi-Tonbaustein-Kontakt / HiFi sound board contact / Contact module HiFi / Contatto modulo audio HiFi / Sonido HiFi |
| S-TON ... | Standard-Tonbaustein-Kontakt / Standard sound contact / Contact module son standard / Contatto modulo audio standard / Sonido standard |
| P/S... | PAL-SECAM-Baustein-Kontakt / PAL-SECAM board contact/ Contact module PAL-SECAM / Contatto modulo PAL-SECAM / PAL-SECAM |
| MA... | Motoranschlußplatte / Motor connection board / Circuit de connection moteurs / Piastra collegamento motore / Conexionado de motores |
| BS... | Bildspeicher / Field memory / Memoire d´image / Memoria d´immagine / Memoria de imagen |
| L... | Laufwerk/ Drive mechanism/ Mécanisme d´ entraînement/ Meccanica/ Grupo mecánico |
| ST... | Stecker/ Plug/ Embase/ Presa/ Conector |

## Steckerbezeichnungen / Connector designations / Désignation des connecteurs / Denominazioni delle spine / Denominacion de conectores

| | |
|---|---|
| L... | Stecker vom Laufwerk / Connector from drive mechanism / / Connecteur vers mécanique / Spina dalla meccanica di movimento / Conector a la mecanica |
| KB... | Stecker vom Kopfverstärker - Bild / Connector from video head amplifier / Connecteur vers ampli têtes video / Spina dall'amplificatore testina video / Conector del amplificador cabezas video |
| KT... | Stecker vom Kopfverstärker - Ton / Connector from audio head amplifier / Connecteur vers ampli têtes audio / Spina dall'amplificatore testina audio / Conector del amplificador cabezas sonido |
| FB... | Stecker vom Fernbedien-Empfänger / Connector from remote control receiver / Connecteur vers télécommande / Spina dal ricevitore di telecomando / Conector del telemando |
| B... | Stecker von der Bedieneinheit / Connector from keyboard unit / Connecteur vers module de commande / Spina dall'unita di comando / Conector de la unidad de mando |
| KH... | Stecker von der Kopfhörerbuchse / Connector from headphone socket / Connecteur vers embase écouteur / Spina dalla presa cuffia / Conector base auriculares |
| MC... | Stecker von Micro-Buchse / Connector from microphone socket / Connecteur vers embase micro / Spina dalla presa microfono / Conector base microfono |
| NT... | Stecker vom Netztrafo / Connector from mains transformer / Connecteur vers transformateur d'alimentation / Spina dal trasformatore di rete / Conector transformador de red |
| FB... | IR-Empfängerplatte / Infrared receiver board / Circuit récepteur infrarouge / Piastra ricevitore ad infrarossi / Placa receptor infrarrojos |

# Abkürzungen / Abbreviations / Abbreviazioni / Abreviaturas / Abreviations

| | D | GB | I | E | F |
|---|---|---|---|---|---|
| ACC | auto. Chrominanzregelung | auto. chrominance control | Regolazione autom. di crominanza | Control automático de croma | Contrôle auto. chroma |
| ACK | autom. Color-Killer | autom. colour killer | Killer colore autom. | Supresor aut. de color | Poetier auto. chroma |
| AFC | autom. Frequenznachstimmung | autom. frequency control | Controllo automatico di frequenza | Control automático de frecuencia | Contrôle auto. fréquences |
| AGC | automatisch geregelter Verstärker | autom. gain control | Amplificatore reg. auto. | Control auto. de ganancia | Ampli. à régl. auto. du gain |
| ALE | Adressenfreigabe | Adress lach enable | Abilitazione linea indirizzo | Habilitación direccionam. | Validation adresse |
| AMP | Verstärker | Amplifier | Amplificatore | Amplificador | Amplificateur |
| AMP PEAK | Spitzenwertverstärker | Amplifier peak | Amplficatore valore di punta | Amplificador de pico | Ampli. valeurs crête |
| A 0... A... | Adresseingänge | Adress inputs | Ingressi indirizzo | Entradas direccionamento | Entrées d`adresses |
| AN 0 ... AN 7 | Analogeingänge | analog inputs | Ingressi analogici | Entradas analógicas | Entrées analog. |
| APC | auto. Phasenregelung | autom. phase control | Regolaz. auto. di fase | Control auto. de fase | Réglage aut. de phase |
| ATT | Ausgangsstufe | Output stage | Stadio di uscita | Etapa de salida | Etage de sortie |
| AW | Aufnahme/Wiedergabe | Record/Playback | Registrazione / riproduzione | Grabación / Reproducción | Enregistrement / Lecture |
| B-ID | Burst-Identifikation | Burst identification | Identificazione burst | Identificación de burst | Identification de burst |
| CC | Chip-Kondensator | Chip capacitor | Condensatore chip | Condensador tipo chip | Chip-condensateur |
| CE | IC-Freigabeeingang | Chip enable | Ingresso abilitato IC | Habilitación "chip" | Validation entrée |
| Chroma Amp. | Chroma-Verstärker | Chroma amplifier | Amplificatore croma | Amplificador de croma | Ampli chroma |
| CL... | Oszillatoranschlüsse | oscillator connections | Collegamenti oscillat. | Conexiones oscilador | Connexions oscillateur |
| CLIP | Begrenzer | Clipper | Limitatore | Limitador | Limitation |
| CLK | Takt | Clock | Clock | Reloj | Hologe |
| CLP | Klemmung | Clamping | Stadio clamp | Fijación | Clamping |
| COUNT DOWN | Rückwärtszähler | Count down | Contat. alla rovescia | Contador descendente | Décompteur |
| COR | Korrelation | Correlation | Correlazione | Correlación | Corrélation |
| CR | Chip-Widerstand | Chip resistor | Resistenza chip | Resistencia tipo chip | Chip-résistance |
| CR 0 | Brücke | Jumper | Ponte | Puente | Pont |
| CT | Chip-Transistor | Chip transistor | Transistor chip | Transistor tipo chip | Chip-transistor |
| CTL | Synchronkopf | Control head | Testina di sincronismo | Cabeza de sincro de pista | Tête synchro |
| DEEMPH | Deemphasis | Deemphasis | Deenfasi | Deenfasis | Désaccentuation |
| DEM | Demodulator | Demodulator | Demodulatore | Demodulador | Demodulateur |
| DET | Detektor | Detector | Rivelatore | Detector | Détection |
| DL | Verzögerung | Delay | Ritardo | Retardo | Retard |
| DOC | Dropout-Kompensation | Dropout compensation | Compens. dropout | Compensador dropout | Comp. du dropout |
| DOP | Dropout-Impuls | Dropout pulse | Impulso dropout | Impulso de dropout | Impulsion du dropout |
| D 0 . . . D 7 | Ausgänge 0...7 | Outputs 0...7 | Uscite 0...7 | Salidas 0...7 | Sorties 0..7 |
| EA | Externer Zugriff | External access | Accesso esterno | Accesso externo | Accès externe |
| EE/PB | Durchschleifbetrieb PB | Connect through mode | Funzi. passante riprod. | Modo transferenc. repro | Contr. électr. en lecture |
| EMPH / EMP | Emphasis | Emphasis | Enfasi | Enfasis | Préaccentuation |
| ENV | Hüllkurvendetektor | Envelope detection | Rivelatore d´inviluppo | Detec. de envelope | Détection enveloppe |
| EQ | Entzerrer | Equalizer | Equalizzatore | Ecualizador | Correction |
| EXP | Expander | Expander | Espansore | Expansor | Expansion |
| FG | Frequenzgenerator | Frequency generator | Generatore di frequenza | Generador de frecuencia | Générateur de fréquence |
| FMDEMOD | FM-Demodulator | FM demodulator | Demodulatore FM | Demod. de frecuencia | Demodulateur FM |
| FM MOD | FM-Modulator | FM modulator | Modulatore FM | Mod. de frecuencia | Modulateur FM |
| FM v. B. | FM vom Band | FM from tape | FM da nastro | FM de la cinta | FM de bande |
| GND | Masse | Ground | Massa | Masa | Masse |
| HEAD SW | Kopfumschalter | Head switch | Commutatore testina | Conmuta. de cabezas | Commutation des têtes |
| H, HE (M), HE (S) | Hallelement | Hall element | Elemento Hall | Elemento Hall | Générteur Hall |
| HL | Vollspurlöschkopf | Full track erase head | Testina cancel. totale | Cabeza de borrado total | Tête effacement principal |
| HPF | Hochpass | High pass filter | Passa alto | Filtro pasa-altos | Filtre passe-haut |
| INH | sperren | inhibit | Interdire, bloccare | Inhibición, bloqueo | Blocage |
| IN / INPUT / INTO | Eingang | Input | Ingresso | Entrada | Entrée |
| INT 1...INT... | Interrupt-Eingang | Interrupt input | Ingresso di interruzione | Entrada "interrupt" | Entrée interrupteur |
| LIM | Begrenzer | Limiter | Limitatore | Limitador | Limitation |
| LIN | linear | linear | lineare | lineal | linéaire |
| LNC | Zeilenrauschen-Unterdrückung | Line noise canceller | Soppress. ronzio di riga | Supresor de la línea de ruido | Suppression parasites lignes |
| LPF | Tiefpaß | Low pass filter | Passa basso | Filtro pasa-bajos | Filtre passe-bas |
| MAIN CONV | Hauptmischer | Main converter | Mescol. principale | Convertidor de Red | Mélangeur principal |
| MIX | Mischer | Mixer | Mescolatore | Mezclador | Mélangeur |

| | | | | | |
|---|---|---|---|---|---|
| MOD | Modulator | Modulator | Modulatore | Modulador | Modulateur |
| MUX | Multiplexer | Multiplexer | Multiplexer | Multiplexer | Etage de multiplexage |
| NC | nicht angeschlossen | not connected | Non collegato | No conectado | Non connecté |
| NLDE | nichtlineare Absenkung | non linear emphasis | Deenfasi non lineare | Deenfasis no lineal | Désaccentuat. non-lin. |
| NLE, NL EMPH | Nichtlineare Anhebung | Non linear emphasis | Enfasi non lineare | Enfasis no lineal | Accentuation non-lin |
| NON-LIN | nichtlinear | non-linear | non lineare | no lineal | non linéaire |
| OE | Ausgansfreigabe | Output enable | Consenso di uscita | Habilitación salida | Validation sortie |
| OG | Ausgangskontrolle | Output control | Controllo di uscita | Control de salida | Contrôle sortie |
| P00... P... | Eingang / Ausgang | Input / Output | Ingresso / uscita | Entrada / salida | Entrée / Sortie |
| P / PB | Wiedergabe | Playback | Riproduzione | Reproducción | Lecture |
| PICT | Bildschärfe | Picture control | Definiz. immagine | Definición de imagen | Contrôle de l´image |
| PLL | Phasenregelkreis | Phase locked loop | Circuito con contr. di fase | Bucle de fase enclavada | Boucle verrouillage phase |
| PPO | Timer-Impuls-generator | Timer pulse generator | Generatore imp. timer | Generador imp. timer | Gén. d´impulsion timer |
| PSEN | Programmspeicherfreigabe | Program store enable | Accesso memoria di programma | Habilitación memoria de programma | Validation mémoire programme |
| PULSE GEN | Impuls-Generator | Pulse generator | Generatore d´impulsi | Generador de impulsos | Générateur d´impulsion |
| R / REC | Aufnahme | Record | Registrazione | Grabación | Enregistrement |
| REC/PB SW | Aufnahme-/Wiedergabe-Schalter | Record / playback switch | Commut. registrazione/ riproduzione | Conmutador grabación/ reproducción | Commut. enregistrement / lecture |
| S, SW | Schalter | Switch | Commutatore | Conmutador | Commutateur |
| SCL / SCK | serieller Takt | serial clock | Clock seriale | "Clock" serie | Bus I2C horloge |
| SDA | serielle Daten | serial data | Dati seriali | "Data" serie | Bus I2C données |
| SI , SIN | serieller Eingang | serial input | Ingresso seriale | Entrada serie | Entrée série |
| SO, SOUT | serieller Ausgang | serial output | Uscita seriale | Salida serie | Sortie série |
| SSCS | Super-Sandcastle | Super sandcastle | Super Sandcastle | Super "sandcastle" | Châte. de sable super |
| SUB CONV | Hilfsmischer | Sub converter | Mescol. ausiliario | Sub conversor | Mélangeur auxiliaire |
| S (Y) SEP | Synchronabtrennung | Sync separator | Separat. di sincronismo | Separador de sincr. | Séparation synchro |
| TL | Tonlöschkopf | Audio erase head | Testina di cancellaz. audio | Cabeza de borado sonido | Tête d`effacement audio |
| TCS | Videotext-Sync. | Teletext comp. sync | Sincr. televideo | Sincro Teletexto | Synchro télétexte |
| TTC | Videotext-Takt | Teletext clock | Cadenza televideo | "Clock" Teletexto | Signal horloge télétexte |
| TTD | Videotext-Daten | Teletext data | Dati televideo | "Data" Teletexto | Signal data télétexte |
| UREF | Referenzspannung | Reference voltage | Tensione di riferimento | Tensión de referencia | Tension de référence |
| VAG/VAGND | Bezugsmasse für die A/D-Wandler | Reference ground for the A/D converter | Massa di riferimento per convertitore A/D | Masa de referencia conversor A/D | Masse de référence pour convertisseur A/D |
| VAREF | Bezugsspannung für die A/D-Wandler | Reference voltage for the A/D converter | Tensione di riferimento per convertitore A/D | Tensión de referencia conversor A/D | Tension réf. pour convertisseur A/D |
| VBB | Substratanschluß | Substrate pin | Terminale substrato | Conexión al substrato | Pin circuit imprimé |
| VCC/VPP | Betriebsspannung | Power supply voltage | Tensione di alimentazione | Tensión de alimentación | Tension de service |
| VCO | spannungsgesteuerter Oszillator | Voltage controlled oscillator | Oscillatore controllato in tensione | Oscilador controlado por tensión | Oscillat. controlé en tension |
| VDD | Betriebsspannung | Power supply voltage | Tensione di alimentazione | Tensión de alimentación | Tension de service |
| VH | Betriebsspannung für Hallelemente | Operating voltage for hall elements | Tensione aliment. per elemento Hall | Alimentación elementos Hall | Tension pour élément de Hall |
| VLOAD | Betriebsspannung | Power supply voltage | Tensione di alimentaz. | Tensión alimentación | Tension de service |
| VM | Motorbetriebsspannung | Operating voltage for the motor | Tensione aliment. per motore | Tensión alimentación motor | Tension de service moteur |
| VPD | Betriebsspannung für RAM | Power supply voltage for the RAM | Tensione aliment. per RAM | Tensión alimentación RAM | Tension de service RAM |
| VPRE | Betriebsspannung | Power supply voltage | Tensione di alimentaz. | Tensión alimentación | Tension de service |
| VS | | | | | |
| VSS | Masse | Ground | Massa | Masa | Masse |
| VXO | spannungsgesteuerter Oszillator | voltage controlled oscillator | Oscillatore comando in tensione | Oscilador controlado por tensión | Oscillateur controlé en tension |
| Wdg / WDG | Wiedergabe | Playback | Riproduzione | Reproducción | Lecture |
| XO | Oszillator | Oscillator | Oscillatore | Oscilador | Oscillateur |
| XTAL, X | Oszillatoranschlüsse | Oscillator connections | Collegamenti oscillat. | Cristal de cuarzo | Cristal, quartz |
| Y-EE | Luminanz-Signal (EE) | Luminance signal (EE) | Seg. di luminanza (EE) | Señal de luminanzia EE | Sign. de luminance EE |
| Y-ENC | Luminanz-Encoder | Luminance encoder | Codif. luminanza | Codificador luminanzia | Encodeur luminance |
| Y MP | BAS-Signal (Main) | CVS signal (Main) | Segnale BAS (Main) | Señal BAS (Main) | Signal video (Main) |
| Y S | BAS-Signal (Sub) | CVS signal (Sub) | Segnale BAS (Sub) | Señal BAS (Sub) | Signal video (Sub) |
| 1 D ... 8 D | Dateneingänge | Data input | Ingressi dati | Entrada datos | Entrée données |
| 1 Q ... 8 Q | Datenausgänge | Data output | Uscite dati | Salida datos | Sortie données |

# In den Schaltbildern verwendete Ausdrücke
# Terms used in the circuit diagrams
# Terminologia adottata per gli schemi
# Termes utilises sur les schemas de montage
# Términos utilizados en los esquemas

| D | GB | I | F | E |
|---|---|---|---|---|
| A., Aufn., Aufnahme | Record | Registrazione | Enregistrement | Grabación |
| Ablaufsteuerung | Sequence control | Comando funzioni | Procédure servo | Proceso de funciones |
| Analogteil | Analogue part | Sezione analogica | Section analogique | Pieza análoga |
| Anlauf | start up | Spunto | Dèmarrage | Arranque |
| Ansteuerung | Control | Pilotaggio | Commande | Conducción |
| Audio In / out - Audio-Eingang /-Ausgang | Audio Input / output | Ingresso/uscita audio in/oui | Entrée/ sortie audio | Entrada/salida de audio |
| Aufnahmesperre | Record lock | Blocco di registrazione | Verroillage enregistrement | Bloqueo de grabación |
| Bedieneinheit | Keyboard unit | Unità di comando | Etage commande | Unidad de mando |
| Bildspeicher | Field store | Memoria d´immagine | Memoire d´image | Memoria de imagen |
| Capstanmotor | Capstan motor | Motore capstan | Moteur cabestan | Motor del "capstan" |
| Chassisplatte | Chassis board | Piastra telaio | Circuit imprimé | Placa de C.I. |
| Chroma | Chroma | Croma | Chroma | Croma |
| Chroma vom Kopf | Chroma from the heads | Croma dalla testina | Chroma de la tête | Croma desde la cabeza |
| Digitalteil | Digital part | Sezione digitale | Section digital | Pieza digital |
| Display | Display | Display | Afficheur | Display |
| Drehzahl | Revolution | Numero di giri | Nombre des tours | Régimen de giro |
| Eintastung | Insertion | Inserimento | Insertion | Insercion |
| Entstörung | Interference suppression | Soppressione dei disturbi | Anti parasitage | Supresión interferencias |
| EURO-AV-Buchse | EURO-AV socket | Presa Scart | Embase pèritèlèvision | Conector EURO-AV |
| Fädelmagnet | loading solenoid | Magnete di caricamento | Electro-aimant engagement bande | Electroimán (enhebrado) |
| Farbabschalter | Colour switch off | Soppressione colore | Suppression chroma | Supresor de croma |
| Fernbediengeber | Remote control | Telecomando | Emetteur de tèlècommande | Generador de telemando |
| Fly erase - Löschkopf auf dem Kopfrad | Erase Head on the head wheel | Test. cancell. su ruota testine | Tête d´effacement sur le tambour de tête | Cabeza de borrado en el volante |
| Geberplatte | Remote control panel | Piastra generatore | C.I émetteur | Placa emisora |
| Gleichspannung bei AV Aufnahme ohne Signal | DC voltage at AV record without signal | Tens. continua in registazione AV senza segnale | Tension continue en enregistrement AV sans signal | Tensión continua a en grabación sin señal |
| Gleichspannung bei HiFi-Wiedergabe | DC voltage at HiFi playback | Tensione continua in riproduzione HiFi | Tension continue en lecture HiFi | Tensión cont. en reproducción HiFi |
| Hauptmischer | Main mixer | Mescol. principale | Mélancheur pricipal | Convertidor de Red |
| Heizfaden | Filament | Filamento | Filament | Filamento calefactor |
| HiFi-Stereo-Ton | HiFi Stereo Sound | Audio stereo HiFi | Son HiFi stéréo | Sonido HiFi estéreo |
| IR-Empfänger | IR receiver | Ricevitore a raggi IR | Rècept. de tèlècommande | Receptor infrarojos |
| Kammfilter | Comb filter | Filtro a pettine | Filtre-peigne | Filtro en peine |
| Kopfhörerverstärker | Earphone amplifier | Amplificatore cuffia | Ampli casque | Amplificador auriculares |
| Kopfverstärker | Head amplifier | Amplificatore testina | Ampli de tête | Amplificador de cabezas |
| Kopfradmotor | Head wheel motor | Motore ruota testine | Moteur tambour de têtes | Motor del volante de cabezas |
| Laufwerk | Drive mechanism | Meccanica | Mécanisme d´entraînement | Grupo mecánico |
| Li.-BAT (Lithium-Batterie) | Lithium battery | Batteria al litio | Batterie lithium | Batería de litio |
| Links | Left | Sinistra | Gauche | Izquierdo |
| Lötseite | Solder side | Lato saldature | Coté soudures | Lado de las soldaduras |
| Masse analog | analogue ground | Massa analogica | Masse analogique | Masa (analóg.) |
| Masse digital | digital ground | Massa digitale | Masse digitale | Masa (digital) |
| Mischer | Mixer | Mescolatore | Mélancher | Mezclador |
| Motormasse | Motor ground | Massa motore | Masse moteur | Masa motor |
| Netzteil | Power supply | Alimentatore | Etage alimentation | Sector de alimentación |
| Nicht netzgetrenntes Schaltungsteil | non-mains-isolated circuit component | Circuito non separato dalla rete | Partie non isolée du secteur | Sector del circuito no separado de la red. |
| Nulldurchgang | Zero cross over | Passaggio per lo zero | Passage par zéro | Paso por cero |
| nur bei Version... | only with version... | solo nolla versione ... | Sur la version ... | Sólo en la versión |
| Phase | Phase | Fase | Phase | Fase |
| Phasen-Modulation | Phase modulation | Modulazione di fase | Modulation de phase | Modulación de fase |
| Phasen-Rotation | Phase rotation | Rotazione di fase | Rotation de phase | Rotación de fase |
| Play (Wiedergabe) | Playback | Riproduzione | Lecture | Reproducción |
| Primär-Masse | Primary ground | Massa del primario | Masse primaire | Masa del primario |

| | | | | |
|---|---|---|---|---|
| Rec/Record (Aufnahme) | Record | Registrazione | Enregistrement | Grabación |
| Rechnermasse | Prozessor ground | Massa del µC | Masse du µP | Masa del µC |
| Rechts | Right | Destra | Droite | Derecho |
| Schacht oben | Compartment up | Vano cassette alzato | Logement de cass. en bas | Portacassette arriba |
| Schacht unten | Compartment lowered | Vano cassetta abbassato | Logement de cass. en haut | Portacassette abajo |
| Schalter | Switch | Commutatore | Commutateur | Conmutador |
| Schaltregler | Switch control | Regolatore a commutaz. | Régulateur de commutation | Regulador de conmutación |
| Schiebeschalter | Slide switch | Commutatore a slitta | Translateur | Conmutador deslizante |
| Schleiffeder | Slip ring contact | Molla di contatto | Ressort de contact | Resorte de contacto |
| Signalmasse | Signal ground | Massa segnale | Masse signal | Masa de señal |
| Signalpegel bei Aufnahme | Signal level at record | Livello segnale in registrazione | Niveau de signal (enregistrement) | Nivel de señales en grabación |
| Signalpegel bei Wiedergabe | Signal level at playback | Livello segnale in riproduzione | Niveau de signal (lecture) | Nivel de señales en reproducción |
| Spannungsversorgung | Voltage supply | Alimentazione | Alimentation de tension | Alimentación de tensión |
| Standard-Ton | Standard sound | Audio standard | Son standard | Sonido "standard" |
| Tastatur | Keyboard | Tastiera | Clavier | Teclado |
| Testbild | Test picture | Monoscopio | Mire | Carta de ajuste |
| Ton | Sound | Audio | Audio | Sonido |
| Uhr | Clock | Orologio | Horloge | Reloj |
| Umspulen | Wind / Rewind | Avvolgimento / riavvolg. | Bobinage rapide | Bobinado / rebobinado |
| Umpolung | Pole-changing | Inversione di polarità | Inversion de polarite | Inversión de polaridad |
| Universalbuchse | Universal socket | Presa universale | Embase universelle | Conector universal |
| Überspannung | Over voltage | Sovra tensione | Surtension | Sobretensión |
| Video switch - Videoschalter | Video switch | Commutatore video | Commutateur vidéo | Conmutador de video |
| Vorderseite | Front view | Lato anteriore | Boîtier avant | Parte frontal |
| W., Wdg., Wiedergabe | Playback | Riproduzione | Lecture | Reproducción |
| Wandlertrafo | Transductor | Trasduttore | Transfo de conversion | Transformador convertidor |
| z. FM-Ton | to the FM sound | all'audio FM | vers le son FM | al sonido FM |
| ZF-Verstärker | IF amplifier | Amplificatore FI | Ampli FI | Amplificador de FI |

| **Buchsen** | **Sockets** | **Prese** | |
|---|---|---|---|
| Camcorder-Buchse | Camcorder socket | Presa Camcorder | |
| Video IN | Video IN | Video IN | Z = 75 Ω, 1Vpp ± 3 dB |
| S-VHS IN | S-VHS IN | S-VHS IN | |
| Luminanz | Luminance | Luminanza | Z = 75 Ω, 1Vpp ± 3 dB |
| Chroma | Chroma | Croma | Z = 75 Ω, 1Vpp ± 3 dB |
| Audio (L/R) | Audio (L/R) | Audio (L/R) | Z = 100kΩ, U = 0.2V...2V |
| Audio LINE - Buchse | Audio LINE socket | Presa audio LINE | |
| Audio IN | Audio IN | Audio IN | Z = 100 kΩ, U = 0.2V...2V |
| Audio OUT | Audio OUT | Audio OUT | Z < 1 kΩ, U = 0.5V...1.5V |
| Stereo-Kopfhörer-Buchse | Stereo Headphones Socket | Presa per cuffia stereo | Z = 120 Ω, 2x70 mW |
| Stereo-Mikrophon-Buchse | Stereo Microphone Socket | Presa per microfono stereo | Z > 10 kΩ, U = 0.25mV...25mV |
| EURO-AV-Buchse | EURO-AV Socket | EURO-AV | |
| Video IN | Video IN | Video IN | Z = 75Ω, U = 1Vpp ± 3 dB |
| Video OUT | Video OUT | Video OUT | Z = 75Ω, U = 1Vpp ± 3 dB |
| Audio IN | Audio IN | Audio IN | Z > 50 kΩ, U = 0.1V...2V |
| Audio OUT | Audio OUT | Audio OUT | Z < 1 kΩ, U = 0.5V...1.5V |
| S-VHS-Buchse | S-VHS Socket | Presa S-VHS | |
| Video IN | Video IN | Video IN | Z = 75 Ω, 1Vpp ± 3 dB |
| Video OUT | Video OUT | Video OUT | Z = 75 Ω, 1Vpp ± 3 dB |
| Chroma IN | Chroma IN | Chroma IN | Z = 75 Ω, 1Vpp ± 3 dB |
| Chroma OUT | Chroma OUT | Chroma OUT | Z = 75 Ω, 1Vpp ± 3 dB |
| **Fernsteuerbuchse (Synchro edit)**<br>Signalbedingungen stimmen mit denen des Synchro-edit-modes der GRUNDIG-Camcorder überein. | **Remote control (Synchro edit)**<br>Signal condition according to GRUNDIG Camcorder's syncro edit mode. | **Presa di telecomando (Synchro edit).**<br>Le condizioni di segnale coincidono con quelle del funzionamento "Synchro edit" delle telecamera GRUNDIG. | |

## Prinzip des S-VHS (Super-VHS)

Das S-VHS-Verfahren wurde entwickelt, um die gehobenen Ansprüche an die Bildqualität zu befriedigen. Das konventionelle VHS-Format bietet horizontal eine Auflösung von ca. 240 schwarz/weiß-Übergängen (senkrechte Linienpaare). Die Spezifikation der S-VHS-Technologie hebt die Auflösung auf über 400 schwarz/weiß-Übergänge an. Das erreicht man durch Verschieben und Erweitern des Hubbereiches des FM-modulierten Luminanzsignals von 3,8 MHz ... 4,8 MHz (VHS) auf 5,4 MHz ... 7,0 MHz. Erhöht man die Auflösung, steigt normalerweise auch der Rauschanteil. Folglich müssen die Anforderungen an den Rauschabstand bei Bandbreitenerhöhung verschärft werden. Durch eine Vergrößerung des Hubbereichs, sowie Anwendung einer Signalverarbeitung, die das Eingangssignal, abhängig von seiner Amplitude, anhebt, wurde dieses Problem gelöst (Lineare Preemphasis).

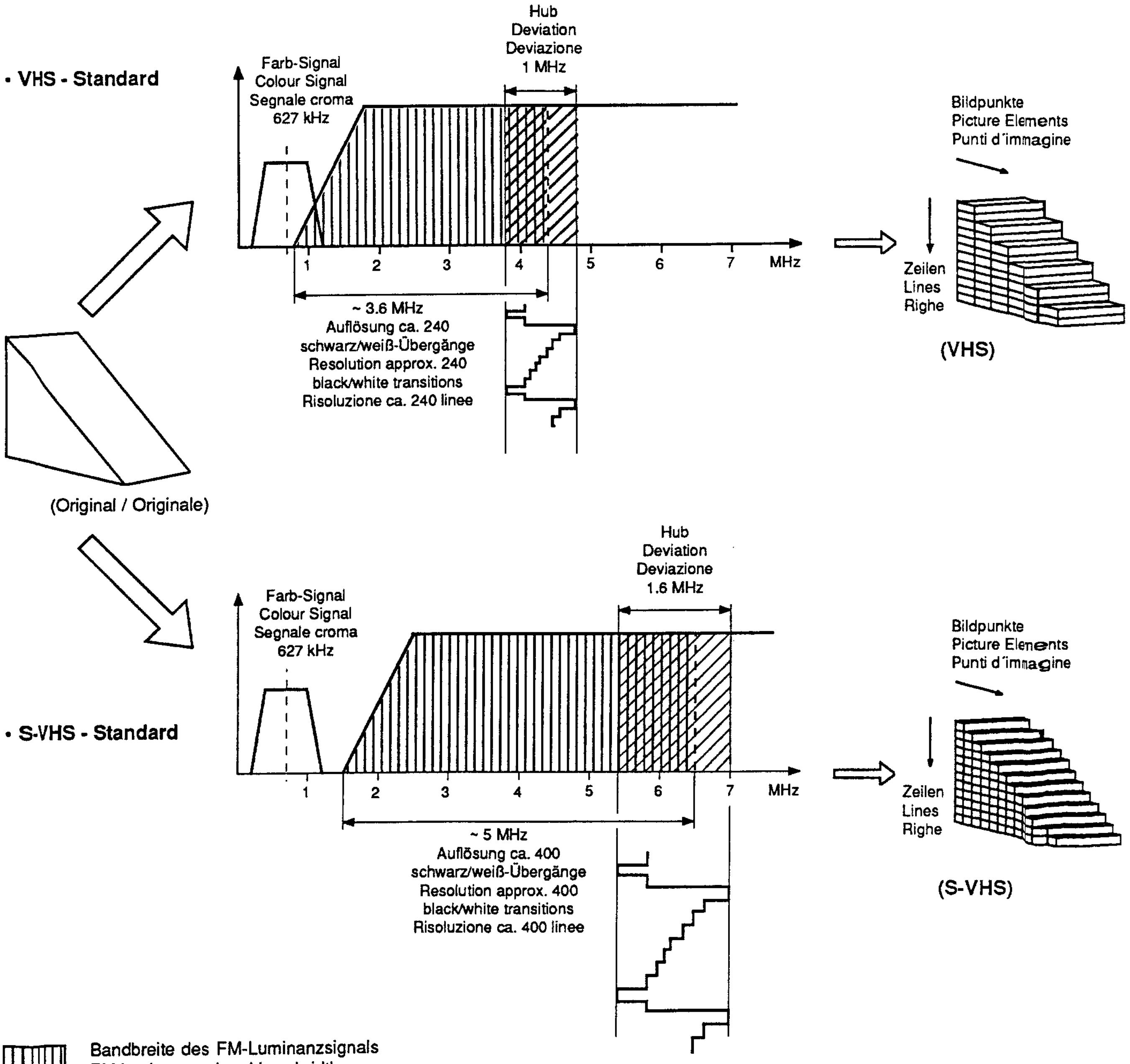
## Principles of S-VHS (Super VHS)

The S-VHS process was developed to satisfy the increasing demands for higher picture quality. The conventional VHS Format produces a horizontal resolution of approx. 240 black/ white transition (vertical line pairs). The specification of the S-VHS-Technology increases the resolution to over 400 black / white transitions. This is acheived by shifting and enlarging the deviation range of the FM-Modulated luminance signal from 3.8 MHz ... 4.8 MHz (VHS) to 5.4 MHz ... 7.0 MHz. When the resolution is increased, generally so does the noise component. The result of an increase in the band width increases the demands on the signal to noise ratio. The expansion of the deviation range, including the use of signal processing which increases the level of the input signal depending upon its amplitude, provides a solution to this problem (Linear Preemphasis).

## Prinzipio del S-VHS (Super-VHS)

Il sistema S-VHS è stato sviluppato per soddisfare le crescenti richieste di miglioramento dell´immagine.

Il formato VHS convenzionale offre una risoluzione orizzontale di ca. 240 linee mentre la tecnica S-VHS aumenta la risoluzione ad oltre 400 linee. Ciò avviene spostando ed ampliando il campo di deviazione del segnale di luminanza modulato in frequenza da 3,8 MHz ... 4,8 MHz (VHS) a 5,4 MHz ... 7,0 MHz. Se la risoluzione aumenta, cresce normalmente anche il rumore. Di conseguenza è stato necessario migliorare il rapporto segnale-rumore a causa della maggiore larghezza di banda. Grazie all´ampliamento del campo di deviazione ed al sistema di elaborazione del segnale che aumenta il segnale d´ingresso in base alla sua ampiezza, questo problema è stato risolto (preenfasi lineare).


• VHS - Standard
Farb-Signal
Colour Signal
Segnale croma
627 kHz
Hub
Deviation
Deviazione
1 MHz
1
2
3
4
5
6
7
MHz
~ 3.6 MHz
Auflösung ca. 240
schwarz/weiß-Übergänge
Resolution approx. 240
black/white transitions
Risoluzione ca. 240 linee
Bildpunkte
Picture Elements
Punti d´immagine
Zeilen
Lines
Righe
(VHS)
(Original / Originale)
• S-VHS - Standard
Farb-Signal
Colour Signal
Segnale croma
627 kHz
Hub
Deviation
Deviazione
1.6 MHz
1
2
3
4
5
6
7
MHz
~ 5 MHz
Auflösung ca. 400
schwarz/weiß-Übergänge
Resolution approx. 400
black/white transitions
Risoluzione ca. 400 linee
Bildpunkte
Picture Elements
Punti d´immagine
Zeilen
Lines
Righe
(S-VHS)

▥ Bandbreite des FM-Luminanzsignals
FM luminance signal bandwidth
Larghezza banda d. segnale luminanza FM

▨ FM-Luminanzsignal
FM luminance signal
Segnale di luminanza FM

## Aufnahme und Wiedergabe im S-VHS-Format

Wenn Sie Aufnahmen im S-VHS-Standard machen wollen, benötigen Sie eine qualitativ hochwertige S-VHS-Cassette. Die S-VHS-Cassette hat ein Kennloch auf der Unterseite, damit der Videorecorder zwischen S-VHS und VHS unterscheiden kann.

Cassetten, die im VHS-Standard bespielt sind, werden automatisch in VHS wiedergegeben; solche, die im S-VHS-Standard bespielt sind, in S-VHS. Deshalb ist es bei Wiedergabe nicht erforderlich den S-VHS-Schalter zu betätigen. Wird eine im VHS-Standard bespielte S-VHS-Cassette wiedergegeben, leuchtet das Label *S-VHS* im Display nicht.

Wenn Sie eine S-VHS-Aufnahme auf einem herkömmlichen VHS-Videorecorder wiedergeben, ist kein Bild erkennbar.

## Recording and Playing back in S-VHS-Format

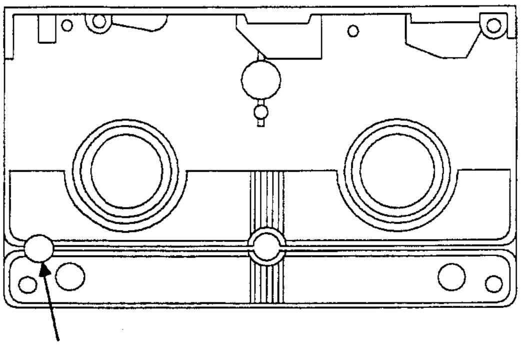
When a S-VHS Standard recording is to be made, a high quality S-VHS Cassette is required. The S-VHS Cassette has an identification hole on the lower side of the housing so that the Video Recorder can differentiate between S-VHS and VHS Cassettes, which are to be played back at VHS-Standard are automatically played back at VHS; and, if the S-VHS Standard is to be played back this is also done at S-VHS. This means that a S-VHS switch does not need to be pressed for playback. If a VHS Standard recording on a S-VHS Cassette is played back the indicator in the display does not show *S-VHS*.

When a S-VHS recording is played back on a conventional VHS Recorder, no picture is displayed.

## Registrazione e riproduzione in standard S-VHS

Se si desidera effetuare registrazioni in S-VHS è necessario utilizzare una cassetta di elevata guaglità. La cassetta S-VHS possiede un foro nella parte inferiore per cui il videoregistratore è in grado di distinguere tra i sistemi VHS e S-VHS. Le normali cassette VHS vengono riprodotte automaticamente in VHS mentre per quelle registrate in S-VHS la riproduzione avvienne in Super-VHS. Pertanto in riproduzione non è necessario agire sul commutatore S-VHS. Se nell'apparecchio si introduce una cassetta S-VHS registrata in VHS, non si accende l'indicazione *S-VHS* del display.

Non è invece possibile riprodurre cassette registrate in S-VHS con un videoregistratore normale; in questo caso non compare nessuna immagine.



Kennloch
Identification hole
Foro di identificazione

**Aufnahme / Record / Registrazione**

| Videorecorder<br>Video recorder<br>Videoregistratore<br>Videocassette<br>Video cassette<br>Videocassetta | S-VHS | VHS |
|---|---|---|
| S-VHS | S-VHS automatisch<br>(VHS, falls angewählt)<br>S-VHS automatically<br>(VHS mode, if selected)<br>Funz. autom. in S-VHS<br>(funz. VHS inseribile) | VHS |
| VHS | VHS | VHS |

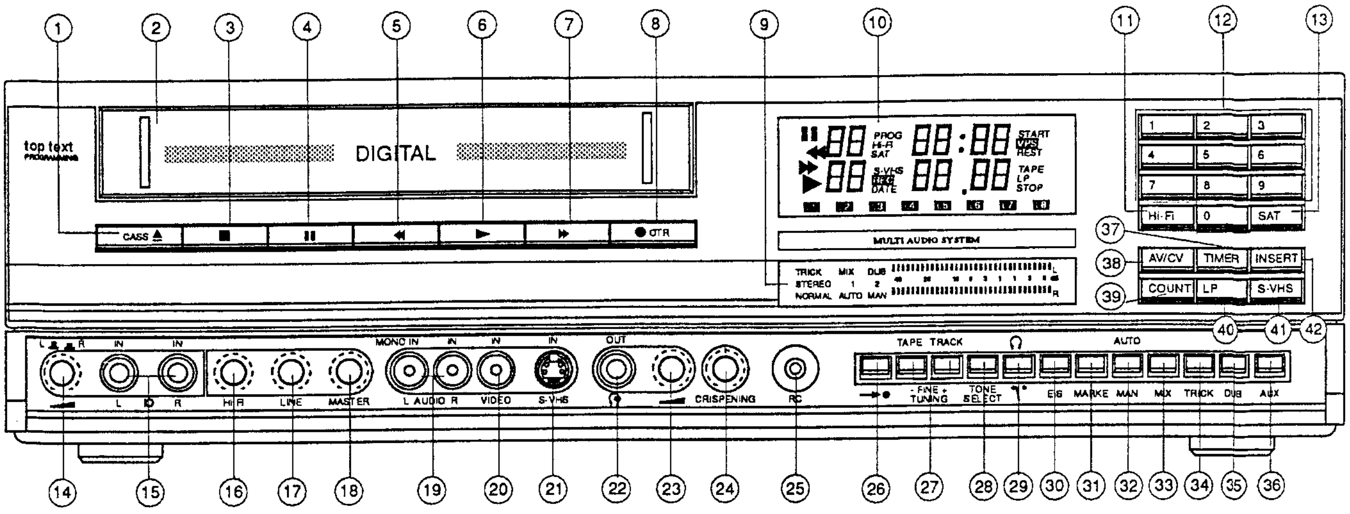
**Wiedergabe / Playback / Riproduzione**

| Videorecorder<br>Video recorder<br>Videoregistratore<br>Videocassette<br>Video cassette<br>Videocassetta | S-VHS | VHS |
|---|---|---|
| Aufnahme im S-VHS-Standard auf S-VHS-Cassette<br>S-VHS tape recorded in S-VHS mode<br>Cassetta S-VHS registrata in S-VHS | S-VHS-Standard<br>S-VHS mode<br>Standard S-VHS | nicht möglich<br>not possible<br>non è possibile |
| Aufnahme im VHS-Standard auf S-VHS-Cassette<br>S-VHS tape recorded in VHS mode<br>Cassetta S-VHS registrata in VHS | VHS-Standard<br>VHS mode<br>Standard VHS | VHS-Standard<br>VHS mode<br>Standard VHS |
| Aufnahme im VHS-Standard auf VHS-Cassette<br>VHS tape recorded in VHS mode<br>Cassetta VHS registrata in VHS | VHS-Standard<br>VHS mode<br>Standard VHS | VHS-Standard<br>VHS mode<br>Standard VHS |

## Ⓓ Bedienelemente des Videorecorders

## ⒼⒷ General notes on the video recorder

## Ⓘ Elementi di comando del VCR


top text
PROGRAMMING
DIGITAL
CASS ▲
● OTR
PROG
HI-FI
SAT
START
VPS
REST
S-VHS
DATE
TAPE
LP
STOP
MULTI AUDIO SYSTEM
TRICK MIX DUB
STEREO
NORMAL AUTO MAN
1
2
3
4
5
6
7
8
9
Hi-Fi
0
SAT
AV/CV
TIMER
INSERT
COUNT
LP
S-VHS
IN
MONO IN
OUT
TAPE TRACK
AUTO
L
R
HIFI
LINE
MASTER
L AUDIO R
VIDEO
S-VHS
CRISPENING
RC
FINE TUNING
TONE SELECT
EIS
MARKE
MAN
MIX
TRICK
DUB
AUX
①
②
③
④
⑤
⑥
⑦
⑧
⑨
⑩
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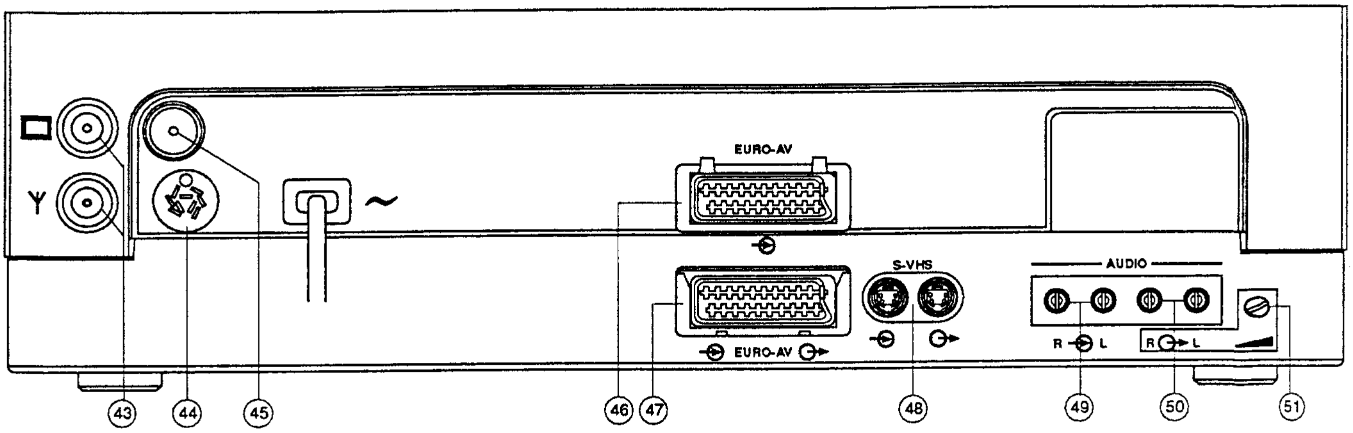

EURO-AV
S-VHS
AUDIO
R L
R L
EURO-AV
㊸
㊹
㊺
㊻
㊼
㊽
㊾
㊿
(51)

| | | | |
|---|---|---|---|
| ① | Cassettenauswurf | Cassette eject | Tasto di espulsione cassetta |
| ② | Cassettenfach | Cassette compartment | Vano cassetta |
| ③ | STOP / Standby | STOP / Standby | STOP / Standby |
| ④ | Pausetaste | Pause button | Tasto di pausa |
| ⑤ | Umspulen/Bildsuchlauf rückwärts | Rewind / picture search reverse | Riavvolgimento/Ricerca immagine |
| ⑥ | Wiedergabe | Playback | Tasto di riproduzione |
| ⑦ | Umspulen / Bildsuchlauf vorwärts | Wind / picture search forwards | Avvolgimento/Ricerca immagine |
| ⑧ | Aufnahme-Taste | Record button | Tasto di registrazione |
| ⑨ | Display (Ton) | Display (Audio) | Display (audio) |
| ⑩ | Display (Daten) | Display (Data) | Display (dati) |
| ⑪ | HiFi-Taste | HiFi button | Tasto HiFi |
| ⑫ | Zifferntasten | Numeric buttons | Tasti numerici |
| ⑬ | SAT-Taste | SAT button | Tasto SAT |
| ⑭ | Pegelsteller für Mikrofoneingänge | Level control for micro inputs | Regolatore di livello per ingressi micro |
| ⑮ | Mikrofonbuchsen | Micro inputs | Ingressi microfono |
| ⑯ | Pegelsteller für HiFi-Signal | Level control for HiFi signal | Regolatore di livello per segnale HiFi |
| ⑰ | Pegelsteller für Audio-Eingänge ㊾ | Level control for Audio Inputs ㊾ | Regolat. di livello per ingressi audio ㊾ |
| ⑱ | Master (Summensignal) - Steller | Master (Sum Signal) - Adjuster | Regolatore master (segnale somma) |
| ⑲ | Audioeingänge (Camcorder) | Audio inputs (Camcorder) | Ingressi audio (camcorder) |
| ⑳ | Videoeingang (Camcorder) | Video input (Camcorder) | Ingresso video (camcorder) |
| ㉑ | S-VHS-Eingang | S-VHS input | Ingresso S-VHS |
| ㉒ | Kopfhörerbuchse | Headphone socket | Presa per cuffia |
| ㉓ | Lautstärkesteller für Kopfhörer | Volume control for headphone | Regolatore di volume per cuffia |
| ㉔ | Crispening-Steller | Crispening control | Regolatore di crispening |
| ㉕ | Start-/Stopsignal-Buchse (Camcorder) | Start/Stop signal socket (Camcorder) | Presa per segnale start/stop (camcorder) |
| ㉖ | Sendersuchlauf-Taste | Station finder key | Tasto di ricerca autom. stazioni |
| ㉗ | Spurlage-/Feinabstimm-Tasten | Tracking / fine tuning keys | Tracking / Fine tuning |

㉘ Tonwahl-Schalter
㉙ Tonwahl-Schalter
㉚ Elektronischer Markensucher
㉛ Marken setzen bei Aufnahme
㉜ Manuelle / Autom. Tonaussteuerung
㉝ "MIX"-Vertonen
㉞ "TRICK"-Vertonen
㉟ Nachvertonen
㊱ Umschalter für Sonderkanäle
㊲ Timertaste
㊳ AV-Wahlschalter
㊴ Umschalttaste für Zählwerk
㊵ Longplay / Standard Play
㊶ VHS / S-VHS
㊷ Insert-Schnitt
㊸ Antennenbuchsen
㊹ Universalbuchse
㊺ Kanaleinsteller
㊻ EURO-AV-Buchse (OUT)
㊼ EURO-AV-Buchse (IN / OUT)
㊽ S-VHS-Eingang / Ausgang
㊾ Audio-Eingang
㊿ Audio-Ausgang
(51) Pegelsteller für Audio-Ausgang ㊿

㉘ Sound select switch
㉙ Sound select switch
㉚ Electronic Mark Finder
㉛ Mark Setting on Record
㉜ Manual / Automatic Sound Level Drive
㉝ "MIX"-Dubbing
㉞ "TRICK"-Dubbing
㉟ Dubbing
㊱ Switchover for Special Channels
㊲ Timer button
㊳ AV select switch
㊴ Switchover key for electronic counter
㊵ Longplay / Standard Play
㊶ VHS / S-VHS
㊷ Insert cutting
㊸ Aerial sockets
㊹ Universal socket
㊺ Channel adjustment
㊻ EURO AV socket (OUT)
㊼ EURO AV socket (IN / OUT)
㊽ S-VHS input / output
㊾ Audio input
㊿ Audio output
(51) Level control for Audio output ㊿

㉘ Selettore selezione audio
㉙ Selettore selezione audio
㉚ Ricerca contrassegni elettronici
㉛ Contrassegni posti in registrazione
㉜ Regolazione manuale/autom. dell'audio
㉝ Sonorizzazione "MIX"
㉞ Sonorizzazione "TRICK"
㉟ Tasto di post-sonorizzazione
㊱ Commutatore per canali speciali
㊲ Tasto timer
㊳ Selettore selezione AV
㊴ Tasto contatore elettronico
㊵ Funzionamento longplay / standard
㊶ VHS / S-VHS
㊷ Taglio per inserimenti
㊸ Presa d'antenna
㊹ Presa universale
㊺ Regolatore di canale
㊻ Presa EURO-AV (OUT)
㊼ Presa EURO-AV (IN / OUT)
㊽ Ingresso / uscita audio
㊾ Ingresso Audio
㊿ Uscita Audio
(51) Regolatore per uscita audio ㊿

## Bedienelemente der Fernbedienung

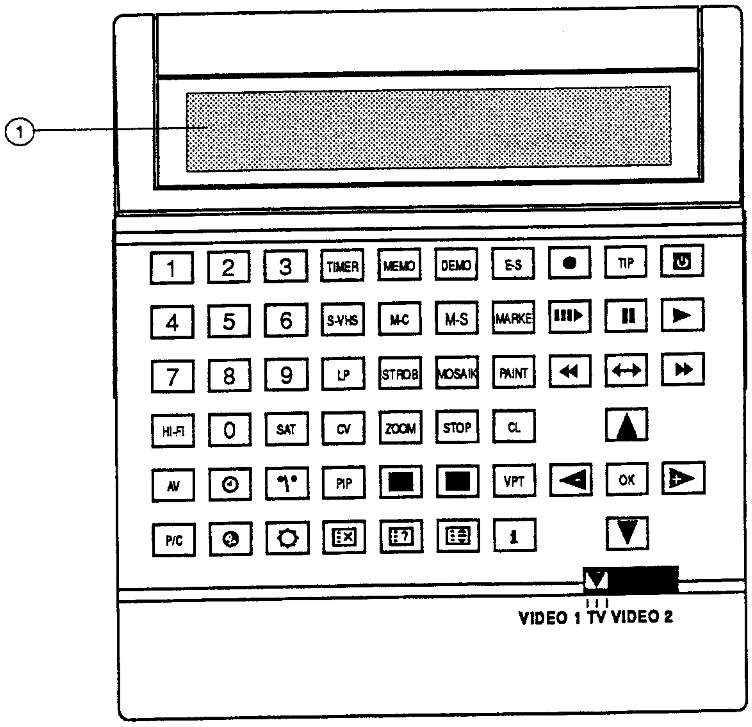
### Bedienebene 1

## Operating Controls for the Remote Control

### Control Level 1

## Elementi di comando del telecomando

### Sezione 1



| | |
|---|---|
| ① | Anzeigefeld |
| **0...9** | Zifferntasten |
| **HiFi, CV SAT, AV** | Zum Anwählen verschiedener Programmquellen für die Aufnahme |
| ◷ | Bestätigt Uhrzeit und Datum. Ruft das Datum in das Anzeigefeld des Recorders |
| \ • | Tonwahlschalter |
| **P / C** | Aktiviert Fine Tuning beim Programmeinstellen |

| | |
|---|---|
| ① | Indicating field |
| **0...9** | Numeric Buttons |
| **HiFi, CV SAT, AV** | To select different sources for recording |
| ◷ | Confirming Time and Date. Calls up the Date for display in the indicator |
| \ • | Sound selection switch |
| **P / C** | Activates Fine Tuning on Programm tuning |

| | |
|---|---|
| ① | Display del telecomando |
| **0...9** | Tasti numerici |
| **HiFi, CV SAT, AV** | Per la scelta delle varie sorgenti di registrazione |
| ◷ | Conferma l'ora e la data. Richiama la data sul display del videoregistratore |
| \ • | Commutatore scelta audio |
| **P / C** | Nella regolazione dei programmi attiva la sintonia fine |

| | |
|---|---|
| **TIMER** | Eröffnet die Timer-Programmierung, bestätigt Eingaben |
| **MEMO** | Speichert ein Einzelbild |
| **DEMO** | Ruft das gespeicherte Einzelbild ab |
| **E-S** | Schaltet auf Bandrücklauf, sucht die nächste elektronische Marke und schaltet danach auf Wiedergabe/ Pause |
| **S-VHS** | Schaltet von S-VHS-Betrieb auf VHS-Betrieb und zurück |
| **M-C** | Wählt die Funktion "Multi-Channel" |
| **M-S** | Wählt die Funktion "Multi-Szene" |
| **MARKE** | Während der Aufnahme können gewünschte Szenen markiert werden |
| **LP** | Schaltet auf Longplay und zurück auf Standard-Play |
| **STROB**<br>**PAINT**<br>**MOSAIK**<br>**ZOOM** | Zum Anwählen verschiedener digitaler Bildeffekte |
| **CL** | Löscht Daten, beendet Funktionen |
| **PIP** | Blendet ein Kleinbild in das Großbild ein |
| ▨ gelb | Zum Wählen von Themen im Videotext-Betrieb |
| ▨ grün | Zum Wählen von Unterbereichen im Videotext-Betrieb |
| **TIP** | Bei Aufnahme/Pause: Blendet Titelseiten und Text-/Graphikboxen ein |
| **VPT** | Für die Aufnahme-Progammierung mit Text-Programming:<br>Blendet die in der Sendertabelle gespeicherte Videotext-Seite in den Bildschirm ein |
| ● | Aufnahme |
| ⏻ | Beendet alle Funktionen |
| \|\|\|▶ | Zeitlupe |
| ❚❚ | Pause (bei Aufnahme), Standbild (bei Wiedergabe) |
| ▶ | Wiedergabe |
| ▶▷ | Umspulen / Bildsuchlauf vorwärts |
| ⟷ | Ziellauf |
| ◁◀ | Umspulen / Bildsuchlauf rückwärts |
| ◀ ▲ ▼ ▶ | Cursor-Tasten, zum Bewegen der Schreibmarke und zum Anwählen<br>- des Programmplatzes<br>- der Spurlage (Tracking)<br>- zur Feinabstimmung (Fine Tuning) |
| **OK** | Bestätigt Daten |
| i | Schaltet auf die Info-Tafel und zurück auf das Fernsehbild |
| **STOP** | Hält Mehrfachseiten im Videotextbetrieb an, schaltet das Anzeigefeld der Fernbedienung ab.<br>"Friert" Bilder ein (bei Wiedergabe und EE-Betrieb). Schaltet das Anzeigefeld der Fernbedienung ab. |
| ≡⇕ | Vergrößert die Zeichenhöhe im Videotextbetrieb |
| ≡? | Gibt "verdeckte" Informationen im Videotextbetrieb frei |
| ◑ ☼<br>≡X | Keine Funktion bei Recorderbetrieb |
| **VIDEO 1**<br>**VIDEO 2**<br>**TV** | Schaltet die Fernbedienung um für die Bedienung eines FFS-Gerätes oder eines zweiten Videorecorders |

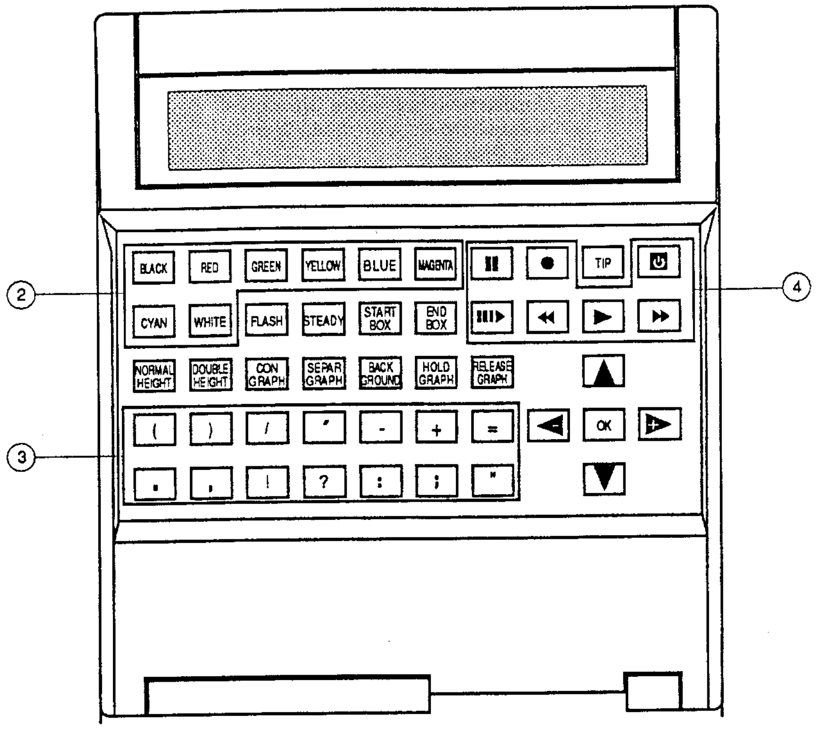
**Die Möglichkeiten der FFS-Fernbedienung entnehmen Sie bitte der Bedienungsanleitung.**

| | |
|---|---|
| **TIMER** | Allows Timer programming, confirms inputs |
| **MEMO** | Stores a single field |
| **DEMO** | Calls up the single field stored |
| **E-S** | Switches the tape to rewind, searches for the next electronic mark and then switches to Playback/Pause |
| **S-VHS** | Switches from S-VHS mode to VHS mode and back again |
| **M-C** | Selects the "Multi-Channel" function |
| **M-S** | Selects the "Multi-Scene" function |
| **MARKE** | The required scene can be marked during recording |
| **LP** | Switches to Long-play and back to Standard-Play |
| **STROB**<br>**PAINT**<br>**MOSAIK**<br>**ZOOM** | For selecting various digital Picture effects |
| **CL** | Erases data, ends functions |
| **PIP** | Blends in a small picture into a large picture |
| ▨ YE | To select the subject in Teletext Mode |
| ▨ GN | To select the lower ranges in Teletext Mode |
| **TIP** | On Record/Pause: Blends in Titlepages and Text/Graphic Boxes |
| **VPT** | For Record Progamming with Text-Programming:<br>Blends in the Teletext page memorised in the Transmitter Table into the screen |
| ● | Record |
| ⏻ | Ends all functions |
| \|\|\|▶ | Slow Motion |
| ❚❚ | Pause (on Record), freeze frame (on Playback) |
| ▶ | Playback |
| ▶▷ | Winding / Picture Search Forwards |
| ⟷ | Go To |
| ◁◀ | Winding / Picture Search Reverse |
| ◀ ▲ ▼ ▶ | Cursor Buttons, to move the marker and letters and to select<br>- the Programm position<br>- the Track position (Tracking)<br>- for Fine Tuning |
| **OK** | Confirms Data |
| i | Switches to the Info-Table and back to the TV picture |
| **STOP** | Holds multiple pages on Teletext mode, switches off the display field on the Remote Control .<br>"Freezes" pictures (on Playback and EE Mode). Switches off the display of the Remote Control. |
| ≡⇕ | Enlarges the character height in the Teletext Mode |
| ≡? | Reveals hidden information in Teletext Mode |
| ◑ ☼<br>≡X | No function on Recorder Mode |
| **VIDEO 1**<br>**VIDEO 2**<br>**TV** | Switches the Remote Control over to control a CTV or to a second Video Recorder |

**Please refer to the Operating Book for information on the possibility to control CTVs.**

| | |
|---|---|
| **TIMER** | Attiva la programmazione TIMER e conferma i dati immessi |
| **MEMO** | Memorizza una singola immagine |
| **DEMO** | Richiama l'immagine memorizzata |
| **E-S** | Commuta in riavvolgimento, cerca la più vicina marcatura elettronica e quindi si porta in pausa / riproduzione |
| **S-VHS** | Commuta da funzionamento S-VHS a VHS standard e viceversa |
| **M-C** | Sceglie la funzione "Multi-Canale" |
| **M-S** | Sceglie la funzione "Multi-Scena" |
| **MARKE** | Durante la registrazione possono venir marcate determinante scene |
| **LP** | Commuta la funzionamento normale in longplay e viceversa |
| **STROB**<br>**PAINT**<br>**MOSAIK**<br>**ZOOM** | Per la scelta di vari effetti video digitali |
| **CL** | Cancella i dati ed annulla le funzioni |
| **PIP** | Attiva l'immagine piccola in quella grande |
| ▨ YE | Per la scelta dei menù in Televideo |
| ▨ GN | Per la scelta dei sottomenù in Televideo |
| **TIP** | In pausa-registrazione: visualizza pagine con titoli o testi/ grafici |
| **VPT** | Per la programmazione delle registrazioni con il Text-Programming: visualizza sullo schermo la pagina televideo memorizzata nella tabella emittenti |
| ● | Registrazione |
| ⏻ | Mette fine a tutte le funzioni |
| \|\|\|▶ | Riproduzione rallentata |
| ❚❚ | Pausa in registrazione, fermo immagine in riproduzione |
| ▶ | Riproduzione |
| ▶▷ | Avvolg./ricerca immagine in avanti |
| ⟷ | Ricerca posizione |
| ◁◀ | Riavvolg./ricerca immag. all'indietro |
| ◀ ▲ ▼ ▶ | Tasti cursore, per spostare l'evidenziatore e scegliere:<br>- la posizione di programma<br>- la pos. della traccia (Tracking)<br>- la sinto. fine dei prog. (Fine Tuning) |
| **OK** | Conferma i dati imessi |
| i | Per commutare sulle tabelle informative e per tornare nuovamente al programma TV |
| **STOP** | Blocca le pag. multiple in funzionamento Televideo, spegne il display del telecomando.<br>"Congela" le immagini in riproduz. e in funzionamento EE.<br>Spegne il display del telecomando |
| ≡⇕ | Ingrandisce i caratteri di testi Televideo |
| ≡? | Richiama le informazioni "nascoste" di Televideo (tasto risposta) |
| ◑ ☼<br>≡X | Inattivi per il videoregistatore |
| **VIDEO 1**<br>**VIDEO 2**<br>**TV** | Abilita il telecomando per l'utilizzo di un televisore o di un secondo videoregistratore |

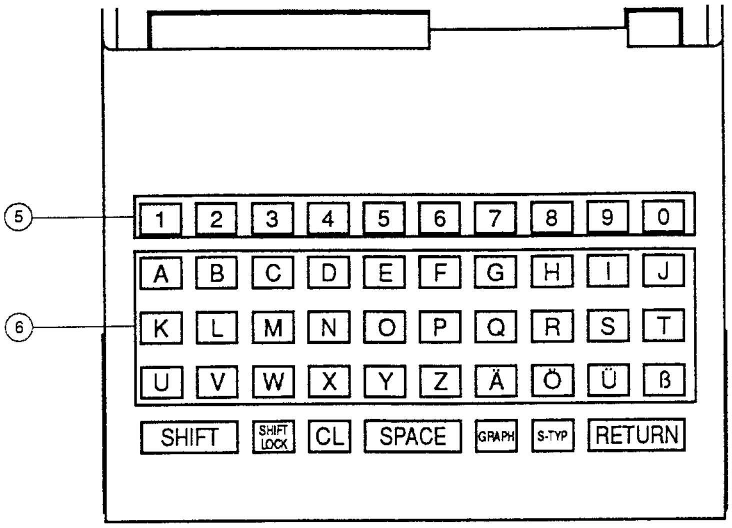
**Le possibilità del telecomando TV sono descritte nelle istruzioni d'uso.**



| | |
|---|---|
| ② | Farbwahltasten für die Farbe des Textes, für die Farbe der Zeile und die Hintergrundfarbe der Seite. |
| **FLASH** | Läßt Texte / Zeichen blinken |
| **STEADY** | Beendet die Funktion "FLASH" |
| **START BOX** | Eröffnet die Funktion "Text-/ Grafik-Boxen erstellen" |
| **END BOX** | Beendet die Funktion "Text-/ Grafik-Boxen erstellen" |
| **NORMAL HEIGHT** | Beendet die Funktion "DOUBLE HEIGHT" |
| **DOUBLE HEIGHT** | Verdoppelt die Höhe des Textes, der Zeichen einer Zeile |
| **CON GRAPH** | Beendet die Funktion "SEPAR GRAPH" |
| **SEPAR GRAPH** | verkleinert Graphikzeichen auf Punktgrafik |
| **BACK GROUND** | Färbt eine Zeile oder die Seite in der vorgewählten Farbe ein |
| **HOLD GRAPH** | Wiederholt das zuletzt eingegebene Graphikzeichen |
| **RELEASE GRAPH** | Hebt die Funktion "HOLD GRAPH" auf |
| ③ | Sonderzeichen für Texteingabe und für verschiedene Kontroll-Funktionen |
| ◀ ▲ ▼ ▶ | Bewegen den Cursor |
| **OK** | Speichert Titelseiten und Text-/ Grafikboxen |
| ④ | Lauffunktionstasten (s. Bedienebene 1) |
| **TIP** | Liest bereits gespeicherte Titelseiten und Text-/Grafikboxen aus dem Speicher in die Editierseite |

| | |
|---|---|
| ② | Colour Selection Buttons for the colour of the text, for the colour of the line and the back ground colour of the page. |
| **FLASH** | Text and Characters flash |
| **STEADY** | Ends the "FLASH" function |
| **START BOX** | Allows entry into the "set Text-/ Graphic Boxes" function |
| **END BOX** | Ends the "set Text-/Graphic Boxes" function |
| **NORMAL HEIGHT** | Ends the "DOUBLE HEIGHT" function |
| **DOUBLE HEIGHT** | Doubles the height of the text, the character on one line |
| **CON GRAPH** | Ends the "SEPAR GRAPH" function |
| **SEPAR GRAPH** | Reduces the Graphic characters to point graphics |
| **BACK GROUND** | Colours a line or a page with the pre selected colour |
| **HOLD GRAPH** | Repeats the last graphic character fed in |
| **RELEASE GRAPH** | Switches off the "HOLD GRAPH" function |
| ③ | Special characters for input of text and for various checking funktions |
| ◀ ▲ ▼ ▶ | Moving the Cursor |
| **OK** | Storing Title pages and Text-/ Graphic Boxes |
| ④ | Tape drive function Buttons (see Control Level 1) |
| **TIP** | Reads prepared and stored Title pages and Text/Graphic Boxes from memory into the Editing page |

| | |
|---|---|
| ② | Tasti di selezione del colore per i testi, le righe e lo sfondo della pagina. |
| **FLASH** | Fa lampeggiare testi e simboli |
| **STEADY** | Disattiva la funzione "FLASH" |
| **START BOX** | Attiva la funzione "Creazione di testi e grafici" |
| **END BOX** | Disattiva la funzione "START BOX" |
| **NORMAL HEIGHT** | Disattiva la funzione "DOUBLE HEIGHT" |
| **DOUBLE HEIGHT** | Raddoppia l'altezza del testo o la traccia di una riga. |
| **CON GRAPH** | Disattiva la funzione "SEPAR GRAPH" |
| **SEPAR GRAPH** | Riduce i caratteri grafici in grafica puntiforme. |
| **BACK GROUND** | Riproduce una riga o la pagina nel colore prescelto. |
| **HOLD GRAPH** | Ripete l'ultimo simbolo immesso. |
| **RELEASE GRAPH** | Estingue la funzione "HOLD GRAPH". |
| ③ | Caratteri speciali per l'immissione di testi e per varie funzioni di controllo. |
| ◀ ▲ ▼ ▶ | Muovono il cursore |
| **OK** | Memorizza le pagine con titoli o testi / grafici. |
| ④ | Tasti funzioni movimento (vedi sezione 1) |
| **TIP** | Preleva le pagine titolate o con testi / grafici dalla memoria e le immette nella pagina "Edit". |



| | |
|---|---|
| ⑤ | Zifferntasten, zum Anwählen von Info-Tafeln, für die Eingaben in die Titelseiten und Text-/Grafikboxen, für Eingaben in die Sendertabelle. |
| ⑥ | Buchstabentasten für Eingaben in die Titelseiten und Text-/Grafikboxen. Zum Eingeben von Sender-Kurzbezeichnungen in die Sendertabelle. |
| **SHIFT** | Nur der nächste Buchstabe wird "großgeschrieben". |
| **SHIFT LOCK** | Alle folgenden Buchstaben werden "großgeschrieben". |
| **CL** | Löscht Buchstaben, Ziffern und Zeichen |
| **SPACE** | Setzt ein Leerzeichen |
| **GRAPH** | Schaltet die Tastatur auf Graphikeingabe um. |
| **S-TYP** | Schaltet nur die nächste Eingabe auf Sonderzeichen um. |
| **Return** | Bewegt den Cursor zur neuen Zeile. |

| | |
|---|---|
| ⑤ | Numeric Buttons, to select from the Info-table, for inputs to the Title pages and Text/Graphic Boxes. To feed into the transmitter Table information. |
| ⑥ | Character Buttons, to feed information into Title pages and Text/ Graphic Boxes. To feed in Transmitter abbreviations into the Transmitter Table. |
| **SHIFT** | Only the next character is "enlarged". |
| **SHIFT LOCK** | All following characters are "enlarged". |
| **CL** | Erases Characters, numbers and letters |
| **SPACE** | Puts a blank character |
| **GRAPH** | Switches the buttons over to Graphics inputs. |
| **S-TYP** | Switches only the next input to special characters. |
| **Return** | Moves the Cursor to a new line. |

| | |
|---|---|
| ⑤ | Tasti numerici, per la scelta delle tabelle informative.<br>Per l'immissione nelle pagine di titolo e nelle zone previste per testi e grafici.<br>Per l'immissione nella "tabella emittenti". |
| ⑥ | Tasti lettere, per l'immissione nelle pagine di titolo e nelle zone previste per testi e grafici.<br>Per l'immissione delle sigle per le emittenti contenute nella tabella omonima. |
| **SHIFT** | Lettera seguente maiuscola. |
| **SHIFT LOCK** | Tutte le lettere seguenti maiuscole. |
| **CL** | Cancella lettere, cifre e simboli. |
| **SPACE** | Inserisce una posizione vuota. |
| **GRAPH** | Commuta la tastiera per l'immissione di grafici |
| **S-TYP** | Commuta in caratteri speciali solo per la successiva immissione. |
| **Return** | A capo riga. |

## Ⓓ Servicehinweise

**1. Entfernen der Gehäuseteile**
- Gehäuseoberteil
  4 Schrauben Ⓐ entfernen und Gehäuseoberteil nach oben abnehmen.
- Frontblende
  3 Schrauben Ⓑ entfernen, Rasthaken ausrasten und Frontblende abnehmen.
- Gehäuseunterteil
  Schrauben Ⓒ herausdrehen und Gehäuseunterteil abnehmen.

## ⒼⒷ Service Advice

**1. Removing the cabinet parts**
- Cabinet Upper Part
  Release the 4 screws Ⓐ and remove the cabinet upper part from above.
- Front Panel
  Release the 3 screws Ⓑ, release the locks and remove the front panel.
- Cabinet Lower Part
  Remove the 3 screws Ⓒ and remove the cabinet lower part.

## Ⓘ Istruzioni di servizio

**1. Smontaggio del mobile**
- Parte superiore
  Svitare le 4 viti Ⓐ per estrarre la parte superiore del mobile dall'alto.
- Pannello frontale
  Svitare le 3 viti Ⓑ, sbloccare i ganci e togliere il pannello anteriormente.
- Parte inferiore
  Svitare le viti Ⓒ per levare il pannello inferiore.

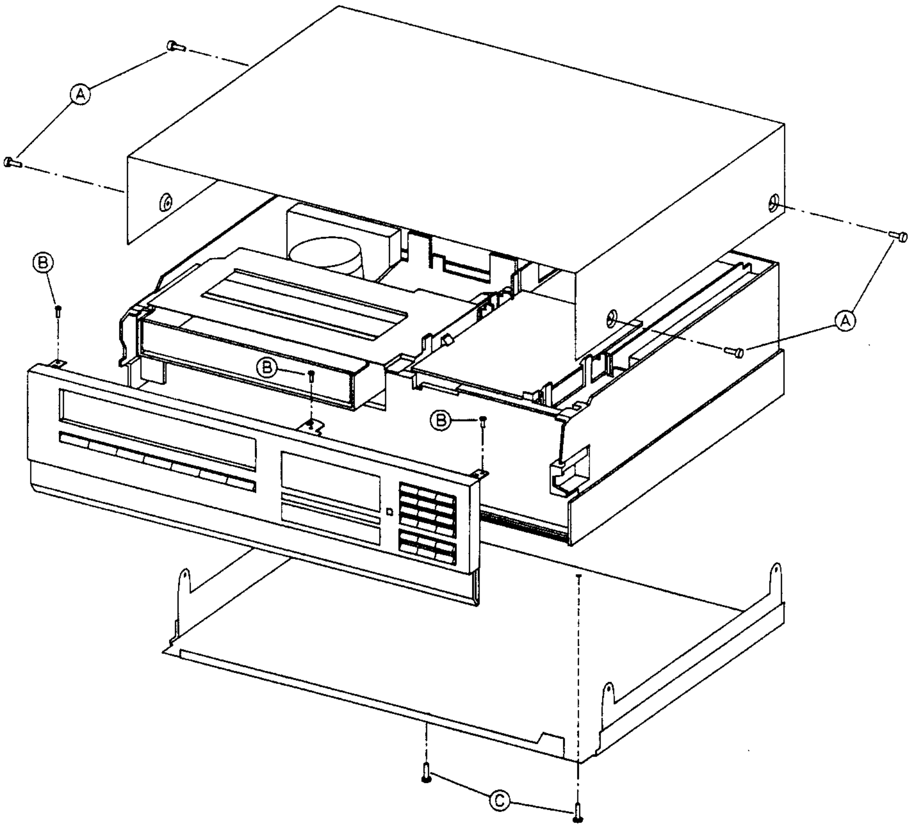


**Fig. 1**

**2. Baugruppenübersicht**

**2. General arrangement**

**2. Raffigurazione delle unità che compogono l'apparecchio**

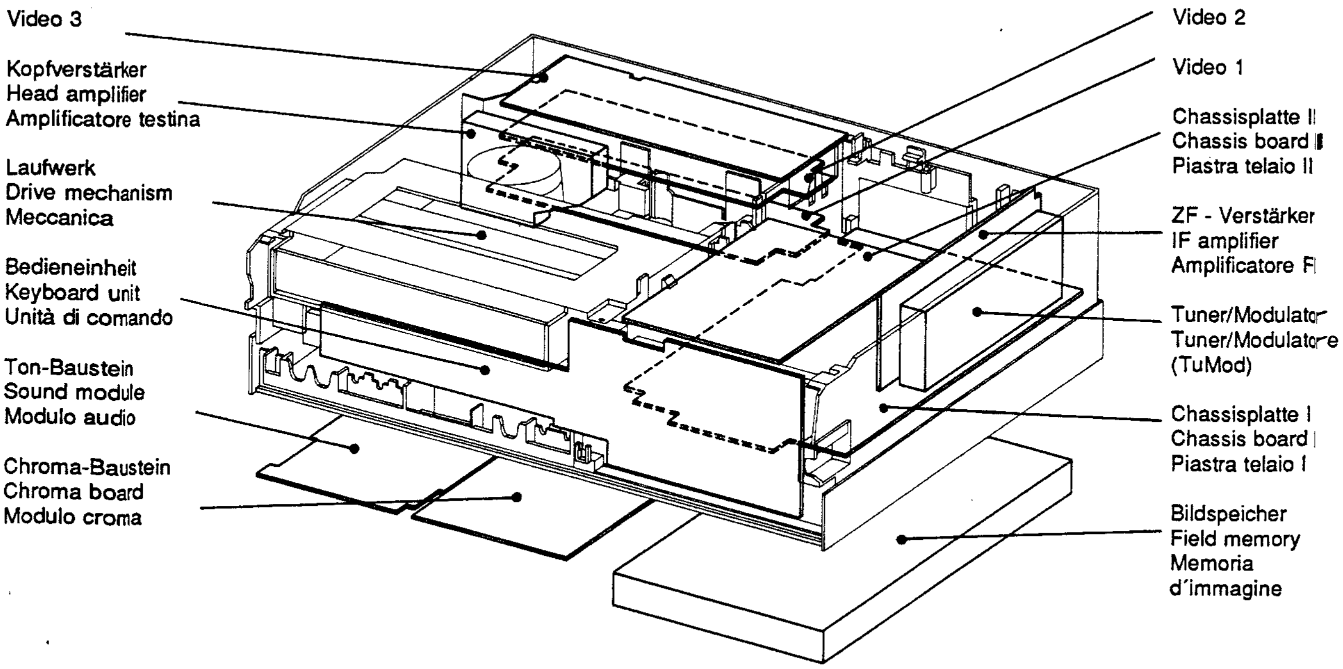

Video 3
Kopfverstärker
Head amplifier
Amplificatore testina
Laufwerk
Drive mechanism
Meccanica
Bedieneinheit
Keyboard unit
Unità di comando
Ton-Baustein
Sound module
Modulo audio
Chroma-Baustein
Chroma board
Modulo croma
Video 2
Video 1
Chassisplatte II
Chassis board II
Piastra telaio II
ZF - Verstärker
IF amplifier
Amplificatore FI
Tuner/Modulator
Tuner/Modulatore
(TuMod)
Chassisplatte I
Chassis board I
Piastra telaio I
Bildspeicher
Field memory
Memoria
d'immagine

**Fig. 2**

**3. Lösen von Steckverbindungen**

Beachten Sie bitte die verschiedenen Steckerausführungen (Fig. 3a / 3b)!

**Fig. 3a:** 1 - Rastnase lösen
2 - Stecker ziehen

**Fig. 3b:**

- Lösen der Steckverbindung: Kontaktschieber Ⓞ herausziehen.
- Kontaktieren der Steckverbindung: Kabelenden in das Kontaktgehäuse schieben und Kontakte schließen.

**3. Disconnection of plug-type connectors**

Please note the different types of connectors (Fig. 3a / 3b)!

**Fig. 3a:** 1 - Disengage the lug.
2 - Unplug the connector.

**Fig. 3b:**

- Releasing the plug connector: Pull out the contact slider Ⓞ .
- Re-making the plug connection: Insert the cable ends into the contact housing and close the contacts.

**3. Disinnesto dei collegamenti**

Annotare i diversi tipi di connettori impiegati (figg. 3a / 3b)!

**Fig. 3a:** 1 - Sbloccare il nasello.
2 - Estrarre il connettore.

**Fig. 3b:**

- Per staccare il collegamento, togliere il cursore di contatto Ⓞ .
- Per ripristinare il collegamento, inserire le estremità del cavo nell'apposita piastra e chiudere i contatti.

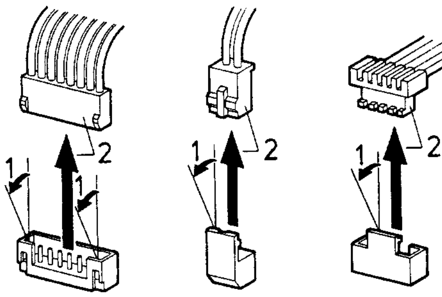


Fig. 3a

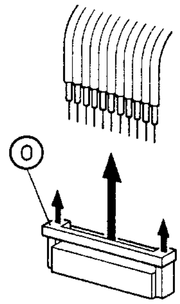


Fig. 3b

## 4. Platinenausbau für Modultausch

### 4.1 Bedieneinheit

- Rastnasen in Pfeilrichtung öffnen (Fig.4), Steckverbindung lösen und Baustein herausnehmen.

### 4.2 Bildspeicher

- Steckverbindungen lösen. 4 Schrauben Ⓓ entfernen und Bildspeicher aus dem Gerät nehmen (Fig. 5).

## 4. Removing the panels for module replacement

### 4.1 Keyboard unit

- Open the locking lugs in the direction of the arrows (Fig. 4), release the plug connections and remove the module.

### 4.2 Field store

- Release the plug connections. Release the 4 screws Ⓓ and take the Field Store out of the machine (Fig. 5).

## 4. Smontaggio dei moduli

### 4.1 Modulo comandi

- Aprire i naselli in direzione della freccia (fig. 4). Staccare il collegamento ed estrarre il modulo.

### 4.2 Memoria d'immagine

- Staccare i collegamenti ad innesto. Svitare le 4 viti Ⓓ e togliere il modulo (fig. 5).

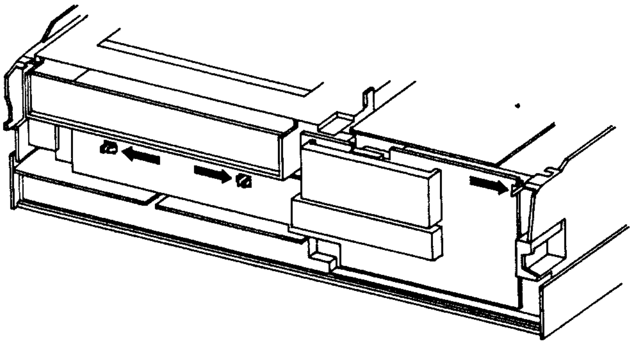


Fig. 4

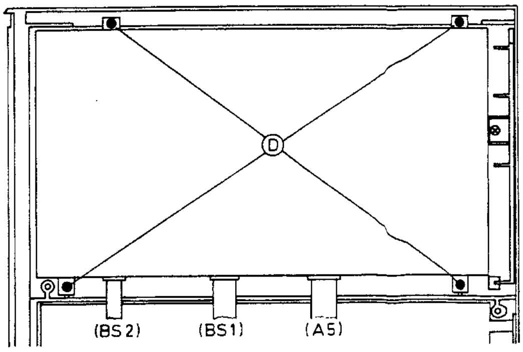


Fig. 5

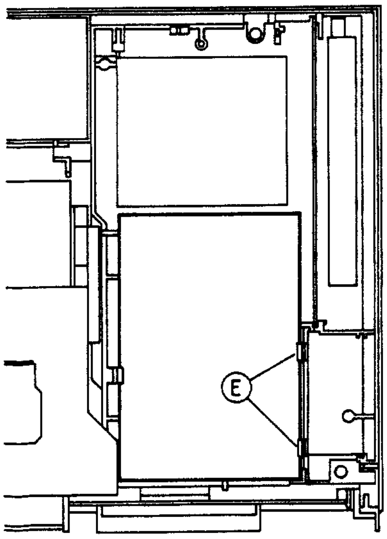


Fig. 6

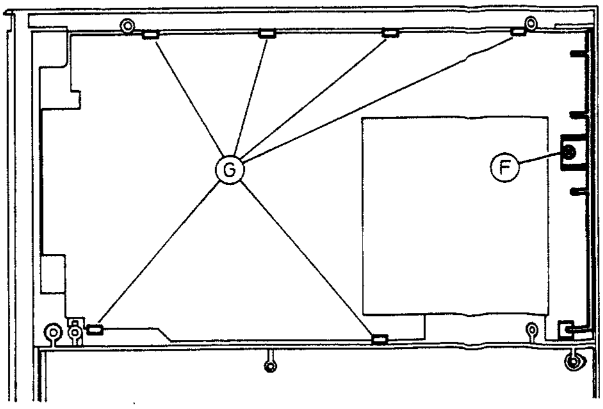


Fig. 7

### 4.3 Chassisplatte II

- 2 Rasthaken Ⓔ öffnen, Steckverbindungen lösen und Chassisplatte II herausnehmen (Fig.6).

### 4.4 Chassisplatte I

- Chassisplatte II hochklappen (Kap. 5.3) und Steckverbindungen zur Chassisplatte I lösen.
- Bildspeicher ausbauen.
- Schraube Ⓕ und Plattenhalter entfernen.
- 6 Rastnasen Ⓖ lösen und Chassisplatte I herausnehmen (Fig. 7).
  **Beim Einbau auf Netzteilabschirmung achten (VDE / IEC-Vorschrift)!**

### 4.5 Chromabaustein

- Frontblende abnehmen, Steckverbindungen lösen und 6 Schrauben Ⓗ herausdrehen.
- Chromabaustein an der Buchsenseite aus dem Gerät schwenken (Pfeilrichtung 1) und vorsichtig in Pfeilrichtung 2 herausziehen (Fig. 8). Auf Reglerknöpfe achten!

### 4.6 Tonbaustein

- Frontblende abnehmen, Steckverbindungen lösen und 6 Schrauben Ⓘ herausdrehen.
- Tonbaustein an der Buchsenseite aus dem Gerät schwenken (Pfeilrichtung 1) und vorsichtig in Pfeilrichtung 2 herausziehen (Fig. 9). Auf Reglerknöpfe achten!

### 4.3 Chassis Panel II

- Open the 2 locking lugs Ⓔ, release the plug connections and take out the Chassis Panel II (Fig.6).

### 4.4 Chassis Panel I

- Hinge the Chassis Panel II (Para 5.3) and upwards release the plug connections to the Chassis Panel I.
- Remove the Field Store.
- Release the screws Ⓕ and the Panel Holder.
- Release the 6 locking lugs Ⓖ and take out the Chassis Panel I (Fig 7).
  **When reassembling, observe the Regulations concerning the Main Stage Screening (VDE/IEC Regulations)!**

### 4.5 Chroma module

- Remove the front panel, release the plug connections and remove the 6 screws Ⓗ.
- Hinge the Chroma Module out from the socket side of the machine (arrow 1) and carefully take it out in the direction of arrow 2 (Fig. 8). Do not damage the control knobs!

### 4.6 Sound module

- Remove the front panel, release the plug connections and remove the 6 screws Ⓘ.
- Hinge the sound module out from the socket side (arrow 1) of the machine and carefully take it out in the direction of the arrow 2 (Fig. 9). Do not damage the control knobs!

### 4.3 Piastra telaio II

- Sbloccare i 2 ganci Ⓔ, staccare i collegamenti ad innesto ed estrarre la piastra (fig. 6).

### 4.4 Piastra telaio I

- Sollevare la piastra telaio II (cap. 5.3) e staccare i collegamenti ad innesto che portano alla piastra I.
- Smontare la memoria d'immagine.
- Togliere la vite Ⓕ ed il supporto della piastra.
- Sbloccare i 6 naselli Ⓖ ed estrarre la piastra telaio I (fig. 7).
  **Durante il montaggio fare attenzione allo schermo protettivo dell'alimentatore (sec. norme VDE/IEC)!**

### 4.5 Modulo croma

- Togliere la mascherina frontale, staccare i collegamenti e svitare le 6 viti Ⓗ.
- Sollevare il modulo croma lato prese verso la freccia 1 e per estrarlo spingere lentamente in direzione della freccia 2 (fig.8). Prestare attenzione ai regolatori!

### 4.6 Modulo audio

- Togliere la mascherina frontale, staccare i collegamenti e svitare le 6 viti Ⓘ.
- Sollevare il modulo audio lato prese verso la freccia 1 e per estrarlo spingere lentamente in direzione della freccia 2 (fig. 9). Prestare attenzione ai regolatori!

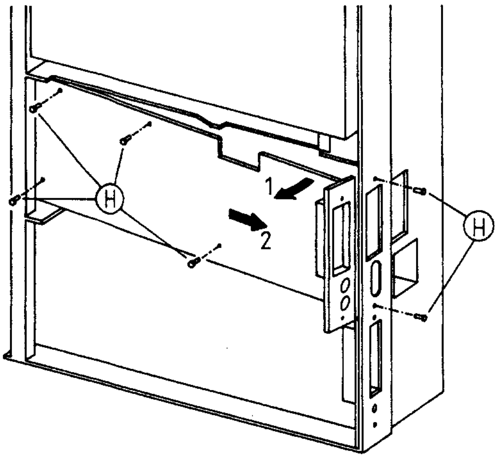


Fig. 8

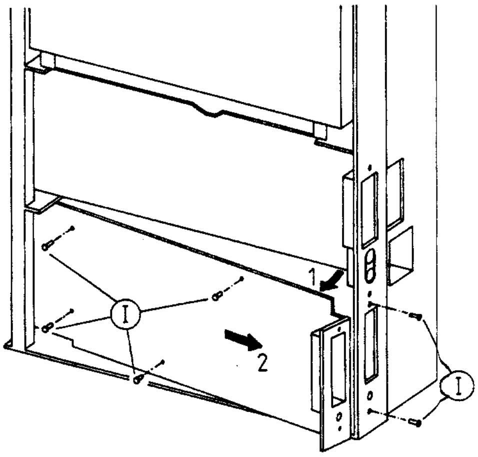


Fig. 9

### 4.7 Tuner / Modulator (TuMod)

- Schrauben des Bildspeichers (Fig. 5) entfernen und Bildspeicher wegklappen.
- Anschlüsse des TuMods entlöten und TuMod von der Chassisplatte I abziehen.

### 4.8 Videobaustein 1

- Chromabaustein (Kap. 4.5), Tonbaustein (Kap. 4.6), Schrauben Ⓚ und Abschirmung entfernen.
- Rasthaken Ⓛ öffnen, Baustein nach unten aus dem Gerät nehmen und Steckverbindungen lösen (Fig. 10).

### 4.9 Videobausteine 2 und 3

- 4 Rastnasen Ⓜ am Videobaustein 2 lösen (Fig. 11) und Bausteinkombination herausheben.
- Abstandshalter lösen und Steckverbindungen der Videobausteine trennen.

### 4.10 Kopfverstärker

- 2 Schrauben Ⓝ herausdrehen und Kopfverstärker ausstecken (Fig. 12).

### 4.7 Tuner / Modulator (TuMod)

- Remove the screws for the Field Store (Fig. 5) and hinge the Field Store away. Unsolder the connections to the TuMod and pull the TuMod away from the Chassis Panel I.

### 4.8 Video module I

- Remove the Chroma Module (Para 4.5), Sound Module (para 4.6) screws Ⓚ and screening.
- Release the locking lugs Ⓛ, remove the module from below the machine and release the plug connections (Fig. 10).

### 4.9 Video module 2 and 3

- Release the 4 locking lugs Ⓜ on the Video Module II (Fig. 11) and remove the module combination.
- Release the spacing bracket and separate the plug connections on the Video Modules.

### 4.10 Head Amplifier

- Remove the 2 screws Ⓝ and unplug the Head Amplifier (Fig. 12).

### 4.7 Unità tuner / modulatore (TuMod)

- Togliere le viti (fig. 5) ed estrarre la memoria d'immagine.
- Dissaldare i collegamenti del TuMod ed estrarre l'unità dalla piastra telaio I.

### 4.8 Modulo video 1

- Togliere il modulo croma (cap. 4.5), il modulo audio (cap. 4.6), le viti Ⓚ e lo schermo.
- Aprire i ganci Ⓛ. prelevare il modulo dalla parte inferiore del mobile e staccare i collegamenti (fig. 10).

### 4.9 Moduli video 2 e 3

- Sbloccare i 4 naselli Ⓜ previsti sull'unità 2 (fig. 11) ed estrarre i due moduli video.
- Togliere il distanziatore e separare i collegamenti dei moduli video.

### 4.10 Amplificatore testine

- Svitare le 2 viti Ⓝ ed estrarre l'amplificatore (fig. 12).

### 4.11 ZF-Verstärker

- ZF-Verstärker in Pfeilrichtung von der Chassisplatte I abziehen (Fig. 13).

### 4.11 IF Amplifier

- Pull the IF Amplifier off, in the direction of the arrow, the Chassis Panel I (Fig. 13).

### 4.11 Amplificatore FI

- Togliere l'amplificatore FI estraendolo dalla piastra telaio I in direzione della freccia (fig. 13).

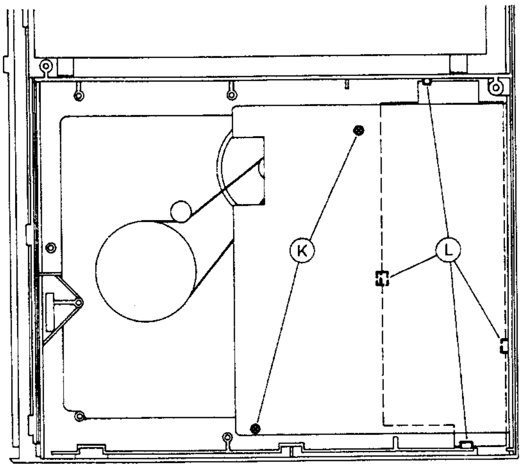


Fig. 10

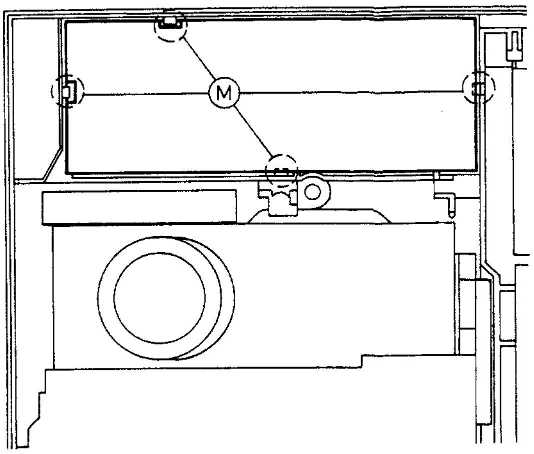


Fig. 11

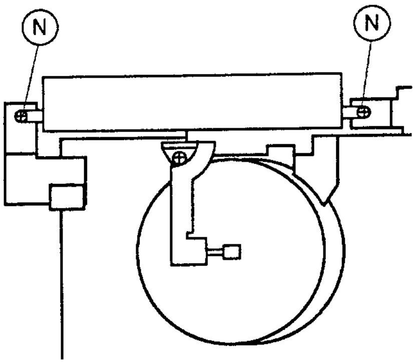


Fig. 12

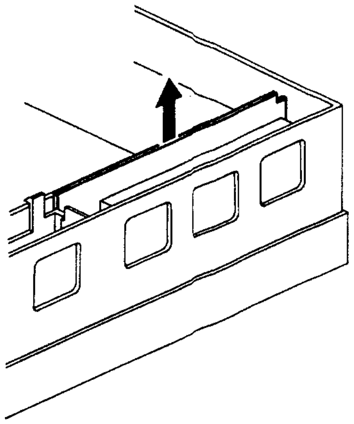


Fig. 13

## 5. Servicestellung der Bausteine

### 5.1 Bedieneinheit

- Rastnasen öffnen (Fig.4), Baustein vom Gehäuse lösen.

### 5.2 Bildspeicher

- Gerät hochkant auf die Laufwerkseite stellen
- Deckel des Bildspeichers öffnen, Platinenrasthaken lösen und Platine aus dem Abschirmgehäuse klappen.

### 5.3 Chassisplatte II

- 2 Rasthaken Ⓔ öffnen, Chassisplatte hochklappen und in die vorgesehenen Aussparungen stecken (Fig. 14).

### 5.4 Chassisplatte I

- Gerät hochkant auf die Laufwerkseite stellen
- 4 Schrauben des Bildspeichers entfernen und Bildspeicher wegklappen (Fig. 5).
- Chassisplatte II in die Servicestellung bringen.

**Netzteil:**

Für Reparaturen im nicht netzgetrennten Teil des Netzteils Trenntrafo benutzen.

- Obere Netzteilabschirmung abziehen.
- Rasthaken Ⓡ der unteren Netzteilabschirmung lösen und Netzteilabschirmung abziehen (Fig. 15).

**Nach der Reparatur Netzteilabschirmungen wieder einbauen (VDE / IEC-Vorschriften)!**

## 5. Service position for the modules

### 5.1 Keyboard unit

- Open the locking lugs (Fig. 4) and release the Module from Cabinet.

### 5.2 Field store

- Raise the machine and position onto the side on which the mechanics is located.
- Open the cover of the Field Store, release the panel locking lugs and hinge the panel out from the screening housing.

### 5.3 Chassis panel II

- Release the 2 locking lugs Ⓔ, hinge the chassis panel upwards and fit onto the cut-outs provided (Fig. 14).

### 5.4 Chassis panel I

- Raise the machine and place onto the side on which the mechanics is located.
- Release the 4 screws on the Field Store and hinge the Field Store away (Fig. 5).
- Place the Chassis Panel II into the service position.

**Mains Stage:**

When carrying out repairs in the non-mains-isolated stage of the power supply, a Mains isolation transformer must be used.

- Remove the mains stage screening top cover.
- Release the locking lugs Ⓡ on the lower mains stage cover and pull off the mains stage screening cover (Fig. 15).

**After repairs the Mains Stage Screening must be refitted (VDE/IEC Regulations)!**

## 5. Posizione di servizio dei moduli

### 5.1 Unità comandi

- Aprire i naselli (fig. 4) e togliere l'unità dall'apparecchio.

### 5.2 Memoria d'immagine

- Porre l'apparecchio su un fianco dalla parte della meccanica.
- Aprire il coperchio della memoria d'immagine, sbloccare i ganci della piastra ed estrarla dallo schermo protettivo.

### 5.3 Piastra telaio II

- Aprire i 2 ganci Ⓔ, smontare la piastra telaio ed inserirla nelle cavità previste in fig. 14.

### 5.4 Piastra telaio I

- Porre l'apparecchio in posizione verticale sul lato della meccanica.
- Togliere le 4 viti ed estrarre la memoria d'immagine (fig. 5).
- Portare la piastra telaio II in posizione di servizio.

**Alimentatore:**

Per riparazioni con modulo alimentatore non separato dalla rete impiegare il trasformatore di separazione.

- Togliere lo schermo superiore dell'alimentatore.
- Staccare i ganci Ⓡ per asportare anche lo schermo inferiore (fig. 15).

**Dopo la riparazione, questi schermi devono venir riapplicati conformemente alle prescrizioni VDE/IEC!**

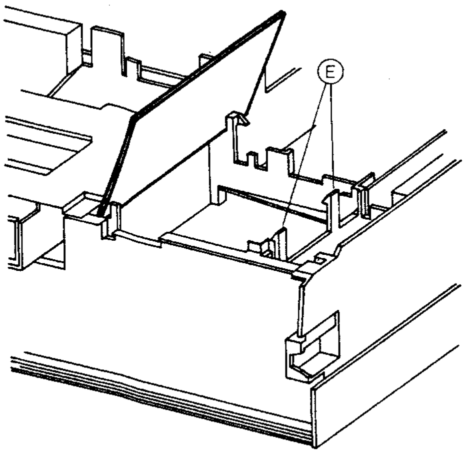


Fig. 14

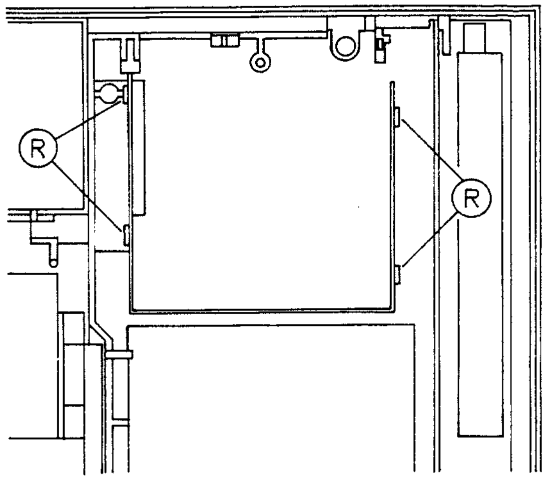


Fig. 15

**5.5 Chromabaustein**
- Gerät hochkant auf die Laufwerkseite stellen
- Steckverbindungen lösen und Frontplatte entfernen.
- 6 Schrauben Ⓗ herausdrehen (Fig. 8).
- Chromabaustein an der Buchsenseite aus dem Gerät schwenken (Pfeilrichtung 1) und vorsichtig in Pfeilrichtung 2 herausziehen. Auf Schalterknöpfe achten!
- Steckverbindungen kontaktieren. Anschlußleitung ST1 durch das Servicekabel 610 ersetzen (Fig. 16).

**5.6 Tonbaustein**
- Gerät hochkant auf die Laufwerkseite stellen
- Steckverbindungen lösen und Frontplatte entfernen.
- 6 Schrauben Ⓘ herausdrehen (Fig. 9).
- Tonbaustein an der Buchsenseite aus dem Gerät schwenken (Pfeilrichtung 1) und vorsichtig in Pfeilrichtung 2 herausziehen. Auf Schalterknöpfe achten!
- Steckverbindungen wieder kontaktieren. Kopfanschlußleitungen mit dem Serviceadapter 602 verlängern (Fig. 17).

**5.5 Chroma module**
- Raise the machine and place onto the side on which the mechanics is located.
- Release the plug connections, remove the front panel and the 6 screws Ⓗ (Fig. 8)
- Hinge the Chroma Module out from the machine on the socket side (direction of arrow 1) and carefully pull out in the direction of arrow 2. Do not damage the switch knobs!
- Reconnect the plug connections. Replace the connecting lead ST 1 with the Service Cable 610 (Fig. 16).

**5.6 Sound module**
- Raise the machine and place onto the side on which the mechanics is located.
- Release the plug connections and remove the front panel.
- Remove the 6 screws Ⓘ (Fig.9).
- Hinge the sound module out from the machine from the side on which the sockets are located (direction of arrow 1) and remove carefully in the direction of arrow 2. Do not damage the switch knobs!
- Remake the plug connections. Increase the length of the head connections by using the Service Adapter 602 (Fig. 17).

**5.5 Modulo croma**
- Porre l'apparecchio su un fianco dalla parte della meccanica.
- Staccare i collegamenti ad innesto e togliere la piastra frontale.
- Svitare le 6 viti Ⓗ (fig. 8).
- Sollevare il modulo croma lato prese verso la freccia 1 e per estrarlo spingere lentamente in direzione della freccia 2. Prestare attenzione ai commutatori!
- Sistemare i collegamenti. Sostituire il connettore ST 1 col quello di servizio 610 (fig. 16).

**5.6 Modulo audio**
- Porre l'apparecchio in posizione verticale sul lato della meccanica.
- Staccare i collegamenti ad innesto e prelevare la piastra frontale.
- Svitare le 6 viti Ⓘ(fig. 9).
- Sollevare il modulo croma lato prese verso la freccia 1 e per estrarlo spingere lentamente in direzione della freccia 2. Attenzione ai commutatori!
- Ripristinare i collegamenti. Allungare i cavetti della testina con la scheda di prolunge 602 (fig. 17).

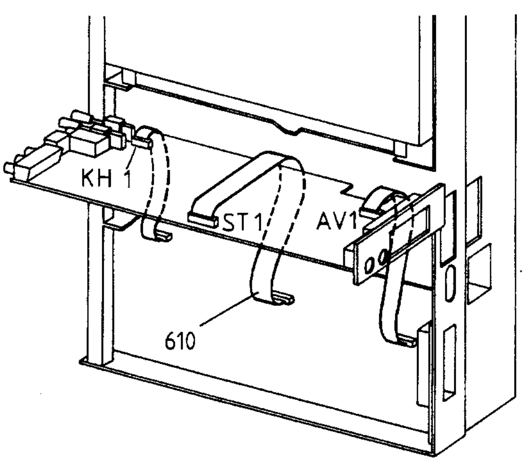


Fig. 16

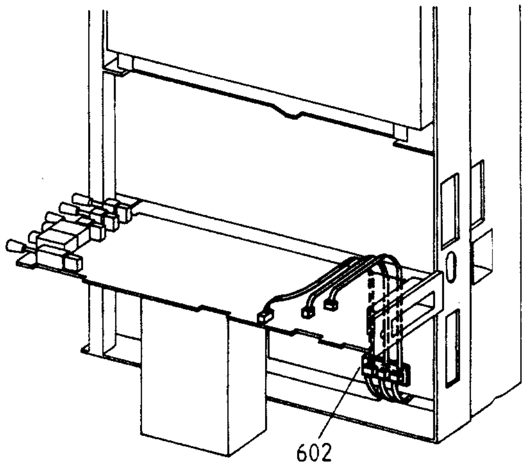


Fig. 17

**5.7 Videobaustein 1**
- Gerät hochkant auf die Laufwerkseite stellen
- Videobaustein 1 ausbauen (Kap. 4.8).
- Baustein aus dem Gerät nehmen und hinter dem Gerät abstellen.
- Chromabaustein und Tonbaustein entweder gemäß Kap. 5.5, 5.6 adaptieren oder wieder einbauen.

**5.7 Video module 1**
- Raise the machine and place onto the side on which the mechanics is located.
- Remove the video module 1 (para 4.8).
- Remove the module and place behind the machine.
- Adapt the Chroma and Sound Module as described in 5.5, 5.6 or refit completely.

**5.7 Modulo video 1**
- Porre l'apparecchio in posizione verticale sul lato della meccanica.
- Smontare il modulo video (cap. 4.8).
- Togliere il modulo dall'apparecchio e sistemarlo posteriormente.
- Procedere all'adattamento dei moduli croma e audio corrispondentemente ai capitoli 5.5, 5.6 oppure al lore montaggio.

### 5.8 Videobausteine 2 und 3

- Videobausteine gemäß Kap. 4.9 ausbauen.
- Abstandshalter lösen und Steckverbindung der Videobausteine trennen.
- Videobausteine mit den Serviceadaptern 601 verbinden (Fig. 18).

### 5.9 ZF-Verstärker

- ZF-Verstärker in Pfeilrichtung von der Chassisplatte I abziehen und auf den Serviceadapter 501 stecken.

### 5.8 Video modules 2 and 3

- Remove the Video Modules as described in para 4.9.
- Release the spacing bracket and separate the plug connections of the video modules.
- Reconnect the Video Modules with the Service Adapter 601 (Fig. 18).

### 5.9 IF Amplifier

- Pull the IF Amplifier out in the direction of the arrow from Chassis Panel I and fit onto the Service Adapter 501.

### 5.8 Moduli video 2 e 3

- Smontare i moduli video come al cap. 4.9.
- Togliere il distanziatore e staccare il collegamento dei moduli video.
- Collegare i moduli con le schede di prolunga 601 (fig. 18).

### 5.9 Amplificatore FI

- Estrarre l'amplificatore FI in direzione della freccia dalla piastra telaio I ed applicarlo sulla scheda di prolunga 501.

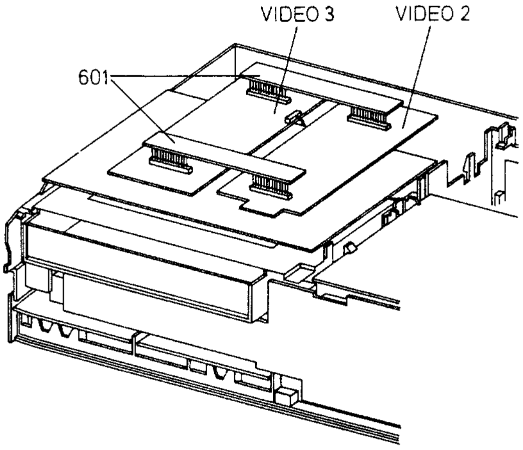


Fig. 18

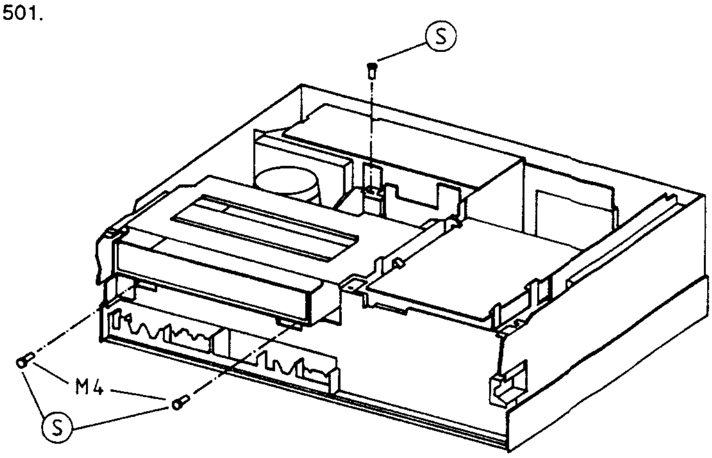


Fig. 19

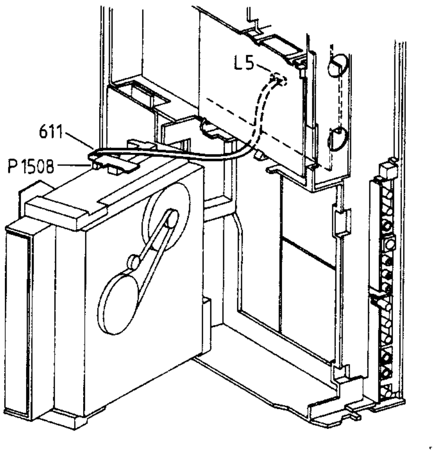


Fig. 20

### 5.10 Laufwerk

- Bedieneinheit ausbauen (Kap. 4.1) und Schrauben Ⓢ entfernen (Fig. 19).
- Gerät hochkant auf die Laufwerkseite stellen
- Steckverbindung von L5 nach P1508 entfernen und durch das Servicekabel 611 ersetzen. Laufwerk herausschwenken (Fig 20).

Beim Einbau die Schrauben M4 zuerst eindrehen!

### 6. Absenken des Cassettenschachtes von Hand (ohne Cassette)

- Riemenscheibe (137) ca. 3 Umdrehungen im Uhrzeigersinn drehen
- Sicherungshebel Ⓟ ausrasten (Fig. 21).
- Riemenscheibe (137) um eine Umdrehung weiterdrehen.
- Hebel Ⓠ nach unten drücken und Sicherungshebel Ⓟ erneut ausrasten.
- Cassettenschacht durch Weiterdrehen der Riemenscheibe (137) im Uhrzeigersinn vollständig absenken.

### 5.10 Mechanics

- Remove the Keyboard unit (Para 4.1) and release the screws Ⓢ (Fig. 19).
- Raise the machine and place onto the side on which the mechanics is located.
- Release the plug connections from L5 to P1508 and replace with the Service Cable 611. Hinge out the mechanics (Fig. 20).

When reassembling the screws M4 must be refitted first!

### 6. Lowering the cassette compartment by hand (without cassette)

- Rotate the drive belt pulley (137) clockwise by about 3 turns.
- Release the retaining lever Ⓟ (Fig. 21).
- Rotate the drive belt pulley (137) one further turn.
- Push the lever Ⓠ down and release the locking lever Ⓟ once again .
- Lower the cassette compartment fully by turning thedrive belt pulley (137) further clockwise.

### 5.10 Meccanica di movimento

- Smontare l'unità comandi (cap. 4.1) e togliere la viti Ⓢ (fig. 19).
- Porre l'apparecchio su un lato dalla parte della meccanica.
- Togliere il collegamento da L5 a P1508 e sostituirlo col cavo di servizio 611. Sollevare la meccanica come indicato da fig. 20.

Durante il montaggio avvitare prima di tutto le viti M4!

### 6. Abbassamento manuale del vano cassette (senza cassetta)

- Ruotare la puleggia della cinghia (137) di 3 giri circa in senso orario.
- Sbloccare la leva di sicurezza Ⓟ (fig. 21).
- Ruotare ancora di 1 giro la puleggia (137)
- Premere verso il basso la leva Ⓠ e sbloccare nuovamente la leva Ⓟ .
- Ruotare ulteriormente la puleggia (137) in senso orario fino ad abbassare completamente il vano cassette.

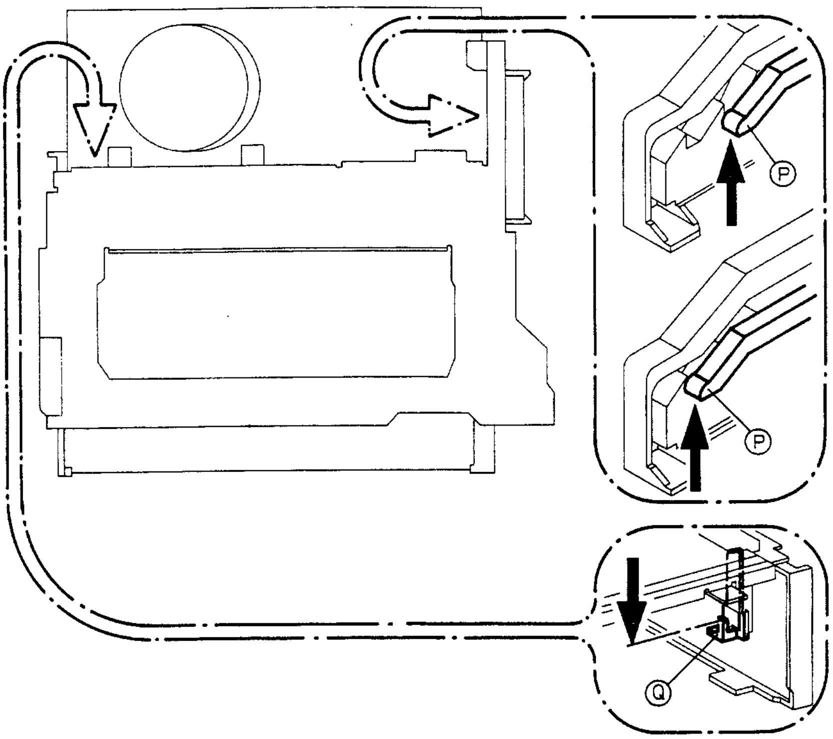


Fig. 21

### 7. Durchführen von Messungen

Bei Messungen mit dem Oszilloskop an Halbleitern sollten Sie nur Tastköpfe mit 10:1 - Teiler verwenden. Außerdem ist zu beachten, daß nach vorheriger Messung mit AC-Kopplung, der Koppelkondensator des Oszilloskops aufgeladen sein kann. Durch die Entladung über das Meßobjekt können diese Bauteile beschädigt werden.

### 8. Auslöten von Flatpack-ICs

Flatpack-ICs lassen sich nur sehr schwer auslöten. Deshalb wollen wir Ihnen eine Möglichkeit aufzeigen, wie Sie diese ICs wechseln können ohne die Platine allzusehr zu beanspruchen. Hierfür ist jedoch ein Subminiatur-Trennschleifer erforderlich.

- Subminiatur-Trennschleifer gemäß Fig. 22 am IC ansetzen und Anschlußbeinchen des IC ohne die Platine zu berühren durchtrennen.
- Abgetrennten IC entfernen und Reste der Anschlüsse ablöten. An den Lötstellen verbleibendes Zinn mit Lotsauglitze entfernen
- Platine mit Glasradierstift im Lötbereich des neuen ICs von Kollophonium reinigen.
- Schleifstaub sorgfältig entfernen.
- Neues IC positionieren und mit einem Lötkolben mit sehr feiner Lötspitze anlöten. Die Lage der Pins 1 entnehmen Sie bitte der Abbildung Fig. 23.

### 7. Carrying out Measurements

When making measurements on semi-conductors with an oscilloscope, ensure that the test probe is set to 10:1 dividing factor. Further, please note that if the previous measurement is made on AC input, the coupling capacitor in the oscilloscope will be charged. Discharge via the item being checked can damage components.

### 8. Unsoldering the Flatpack-ICs

Flatpack ICs can only be unsoldered with difficulty. Therefore a possibility is given which will allow the replacement of these ICs without damaging the panel. For this however, a subminiature cutter is required.

- Fit the sub-miniatur cutter onto the IC as shown in Fig. 22 and cut off the connections of the IC without touching the panel.
- Remove the separated IC and unsolder the remaining connections. Remove all residues of tin from the solder pads with solder cleaning braid.
- Clean the panel with a glass erasing pen the area of the solder pads for the new IC, of all Collophonium.
- Ensure that all remaining residues are removed.
- Position the new IC and solder using a soldering iron with a very fine tip. Refer to the illustration Fig. 23 to identify the position for pin 1.

### 7. Esecuzione di misure

In caso di misure su semiconduttori effettuate con l'oscilloscopio è necessario utilizzare solo sonde con divisore 10:1. Inoltre è da osservare che dopo una misura compiuta con accoppiamento C.A., il condensatore dell'oscilloscopio può risultare carico e quindi scaricarsi sull'oggetto di misura, danneggiando il componente.

### 8. Dissaldatura di IC Flatpack

Poichè quest'operazione risulta problematica, Vi indichiamo il modo per sostituire questi integrati di tipo ultrapiatto senza danneggiare eccessivamente la piastra. Per questo è previsto l'uso di un tronchesino miniatura.

- Applicare il tronchesino come in fig. 22 e tagliare i piedini dell'IC senza toccare la piastra.
- Allontanare l'IC e dissaldare le parti residue dei collegamenti. Asportare lo stagno tuttora presente nei punti di saldatura con una calza dissaldante.
- Pulire con una spatola per asportare la colofonia i punti sulla piastra dove va applicato il nuovo IC.
- Togliere con cautela i residui lasciati dalla spatola.
- Collocare il nuovo IC e saldarlo con un saldatore avente una punta sottile. La posizione del pin 1 è riportata in fig. 23.

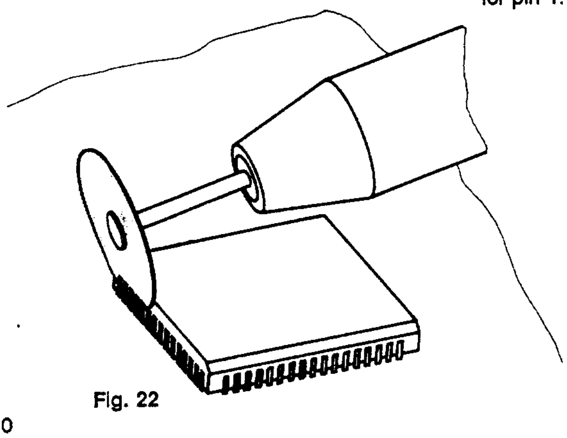


Fig. 22

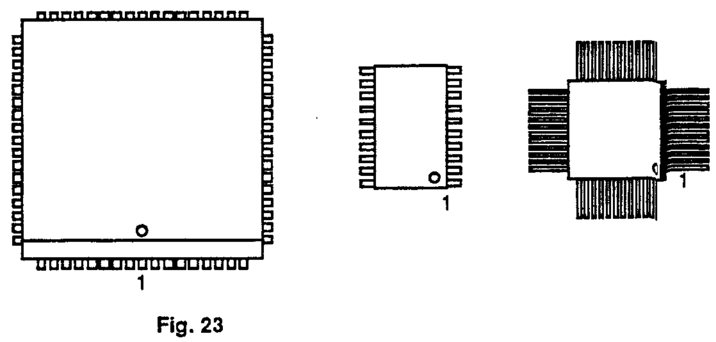


Fig. 23

## D Service-Funktionen

Die Service-Funktionen können Sie über die Fernbedienung aktivieren. Dazu geben Sie die Zahlenfolge 4 9 3 4 ein und drücken anschließend die Taste "OK". Im Display erscheint links neben der Uhranzeige eine "0". Die gewünschte Service-Funktion rufen Sie mit den nachfolgend beschriebenen Tasten auf.

**Löschen der Service-Funktionen**

- Taste ⏻ einmal bzw. zweimal drücken, wenn zusätzlich ausgefädelt werden soll.

| Taste | Funktion | Display-anzeige |
|---|---|---|
| 6 | Kopfradlagengeber-Einstellung mit Testcassette<br>–Gerät fädelt ein<br>–Auto. Lagengebereinstellung und Abspeicherung<br>–Wiedergabe | A 6<br>0 |
| 9 | Pegelabgleich des Standard-Tonteils (s. Abgleich Nr. 4 des Standard-Tonteils) | A 9 |
| II | RAM und EEPROM mit definierten Werten laden (s. Abgleich Nr. 1 der Ablaufsteuerung II)<br>Ende | 0<br>":" (blinkend) |
|  | Mechanische Einstellung bzw. Kontrolle der FM-Pakete und deren Veränderung |  |
| ▶ | Synchronimpuls-Versatz zum K1 / K2 - Übergang 0 ms | 0 |
| ▶ ▶▶ | Synchronimpuls-Versatz zum K1 / K2 - Übergang + 8 ms | 4 |
| ▶ ◀◀ | Synchronimpuls-Versatz zum K1 / K2 - Übergang - 8 ms | 5 |

### Software-Anzeige

- Netzstecker ziehen
- Gerät ans Netz anschließen
- Das Display zeigt kurzzeitig den Softwarestand, bevor die Uhr erscheint.

### Fehleranzeige

Tritt während des Betriebes eine Störung auf, so spricht eine Schutzschaltung an. Der Fehlercode F1 wird im Display blinkend angezeigt.

**Bedeutung des Fehlercodes F1:**

Gerät erkennt Fädelblockade, d.h. der Fädelring hat seine jeweilige Sollstellung nicht erreicht.

## GB Service Functions

The Service Functions can be activated from the Remote Control. For this, feed in the number sequence 4 9 3 4 and then depress the "OK" Button. In the display, to the left of the Clock indication, a figure "0" will be shown. The required Service Function can now be called up as described in the table by depressing the following buttons.

**To cancel the Service Functions**

Depress the button ⏻ once or twice if the unloading function is also required.

| Button | Function | Display indication |
|---|---|---|
| 6 | Head Wheel Position Sensor - Adjustment with Test Cassette<br>–The machine loads the tape in<br>–Automatic Position Sensor Adjustment and Memorising.<br>–Playback | A 6<br>0 |
| 9 | Level Adjustment of the Standard-Sound Stage (see Alignment No. 4 in the Standard-Sound Stage) | A 9 |
| II | RAM and EEPROM is loaded with defined values (see Alignment No. 1 in the Sequence Control II)<br>End | 0<br>" : " (Flashing) |
|  | Mechanical Adjustments or checking the FM envelopes and resulting variations. |  |
| ▶ | Sync Pulse-Offset from K1/K2 change-over 0 ms. | 0 |
| ▶ ▶▶ | Sync Pulse-Offset from K1/K2 change-over + 8 ms | 4 |
| ▶ ◀◀ | Sync Pulse-Offset from K1/K2 change-over - 8 ms | 5 |

### Software Indication

- Disconnect the Mains Plug.
- Reconnect the Machine to the Mains.
- The display will indicate the Software Status for a short period, before the Time is displayed.

### Fault Indication

If a fault occurs during operation, a safty circuit responds. The Fault Code F1 flashes in the display.

**Meaning of the Fault Code F1:**

The machine has identified a loading malfunction, i.e. the loading ring has not reached the appropriate reference position.

## I Funzioni di servizio

Le funzioni di servizio possono venir attivate solo mediante il telecomando. Per questo immettere il codice 4 9 3 4 e premere infine il tasto "OK". A sinistra del display appare l'indicazione "0". La funzione desiderata viene richiamata usando i seguenti tasti.

**Annullamento delle funzioni**

Premere il tasto ⏻ una volta oppure due volte nel caso si dovesse anche scaricare il nastro.

| Tasto | Funzione | Ind. sullo display |
|---|---|---|
| 6 | Regolazione ruota testine con cassetta campione<br>–l'apparecchio carica<br>–regolazione autom. della posizione e memorizzazione<br>–riproduzione | A 6<br>0 |
| 9 | Taratura livello per modulo audio standard (v. taratura 4 del modulo audio standard) | A 9 |
| II | Caricare con valore definiti le unità RAM e EEPROM (v. taratura 1 del modulo comando funzioni II) | 0<br>" : " (pulsante) |
|  | Per la regolazione meccanica risp. te il controllo dei pacchetti FM e la loro variazione |  |
| ▶ | Spostamento dell'impulso di sincronismo al passaggio K1/K2 0 ms | 0 |
| ▶ ▶▶ | Spostamento dell'impulso di sincron. al passaggio K1/K2 +8ms | 4 |
| ▶ ◀◀ | Spostamento dell'impulso di sincron. al passaggio K1/K2 -8ms | 5 |

### Indicazione di software

- Staccare la spina di rete.
- Collegare l'apparecchio alla rete.
- Il display indica brevemente il software prima che appaia l'ora.

### Indicazione di guasto

Se durante il funzionamento si presenta un disturbo, interviene un circuito di protezione e sul display appare lampeggiante l'indicazione di guasto F1.

**Significato di F1:**

L'apparecchio riconosce un blocco nel caricamento del nastro, l'anello di caricamento non si è cioè portato nella giusta posizione.

## Dauerlauf- und Sonderfunktionen

### Aufrufen der Sonderfunktionen
- Codenummer eingeben
- Taste "OK" drücken

### Aktvieren des Zahlenschlosses:
"Geheimzahl" eingeben und Taste "OK" drücken

### Löschen der Dauerlauffunktionen:
- Taste " ⏏ " drücken.

### Zahlenschloß entriegeln
Über Fernbedienung die Zahlenfolge 4 9 3 4 eingeben und Taste "OK" drücken.

| Code | Funktion | Display zeigt |
|---|---|---|
| 8500 | Elektron. Zahlenschloß | A0 |
| * | Dauerlauf Aufnahme »HF« (Prog. 1) | 1 |
| * | Dauerlauf Aufnahme »AV« | AV |
| * | Dauerlauf Wiedergabe bis zum Bandzählerstand beim Dauerlaufstart | A1 |
| 8510 | V-Impuls-Eintastung »Aus« | – |
| 8511 | V-Impuls-Eintastung »Ein« | – |
| 8516 | Fernbedienebene "VIDEO 1" (siehe Bedienungsanleitung) | – |
| 8517 | Fernbedienebene "VIDEO 2" (siehe Bedienungsanleitung) | – |
| 8526 | Fernbedienebene "VIDEO 1" (siehe Bedienungsanleitung) | – |
| 8527 | Fernbedienebene "VIDEO 2" (siehe Bedienungsanleitung) | – |
| 8528 | Abgleich der V-Impuls-Eintastung (siehe Bedienungsanleitung) | A7 |
| 8546 | ohne Zeilensprung (312/313) - für FFS-Geräte mit 50 Hz Bildwechselfrequenz | – |
| 8547 | mit Zeilensprung (312/312) - z.B. für FFS-Geräte mit 100Hz Bildwechselfrequenz | – |

* Anwahl der Sonderfunktion über "MENÜ"

**Hinweis:**
Bei Wiedergabe fehlerhaft bespielter Cassetten kann das Bild springen oder durchlaufen. Dies läßt sich durch Aktivieren der künstlichen V-Impulseintastung verhindern.

## Continuous Soak Test and Special Functions

### Calling up the Special Functions
- Feed in the Code Number.
- Depress the "OK" Button.

### Activating the Security Code:
Feed in the "Security Code" and depress the "OK" Button.

### Erasing the Continous Soak Test Functions:
– Depress the » ⏏ « Button.

### Cancelling the Security Code:
From the Remote Control, feed in the number sequence 4 9 3 4 and depress the "OK" Button.

| Code | Function | Display shows |
|---|---|---|
| 8500 | Electronic Security Code | A0 |
| * | Continuous Soak Test Record »HF« (Prog. 1) | 1 |
| * | Continuous Soak Test Record »AV« | AV |
| * | Continuous Soak Test Playback up to the Tape Counter reading when the Soak Test was started. | A1 |
| 8510 | V-Pulse Insertion »OFF« | – |
| 8511 | V-Pulse Insertion »ON« | – |
| 8516 | Remote Control Level "VIDEO 1" (Refer the Operating Book) | – |
| 8517 | Remote Control Level "VIDEO 2" (Refer the Operating Book) | – |
| 8526 | Remote Control Level "VIDEO 1" (Refer the Operating Book) | – |
| 8527 | Remote Control Level "VIDEO 2" (Refer the Operating Book) | – |
| 8528 | Adjustment of the V-Pulse-Insertion (Refer the Operating Book) | A7 |
| 8546 | No Line Interlacing (312/313) - for CTV Models with 50Hz Frame Frequency. | – |
| 8547 | With Line Interlacing (312/312) - for example for CTV Receivers with 100 Hz Frame Frequency. | – |

* Selection of the Special Functions from "MENU"

**Note:**
When playing back a defective prerecorded cassette the picture may have jitter or run through. This can be prevented by activating the insertion of an artificial V-Pulse.

## Funzionamento continuo e funzioni speciali

### Richiamo delle funzioni:
- Immettere il codice.
- Premere il tasto "OK".

### Per attivare la chiave elettronica:
Comporre il proprio cod. segreto e premere il tasto "OK".

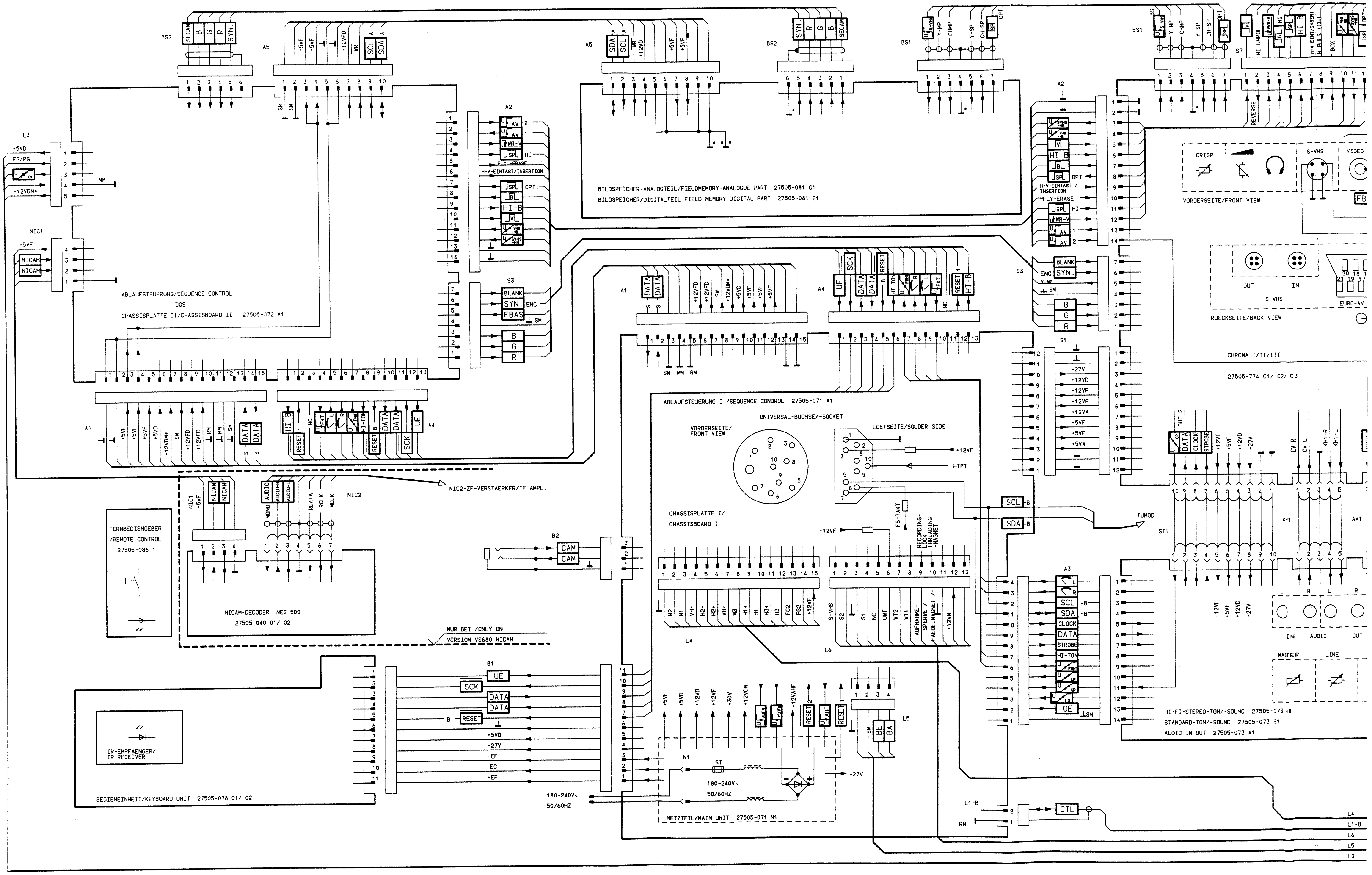
### Anullamento delle funzioni:
- Premere il tasto » ⏏ « .

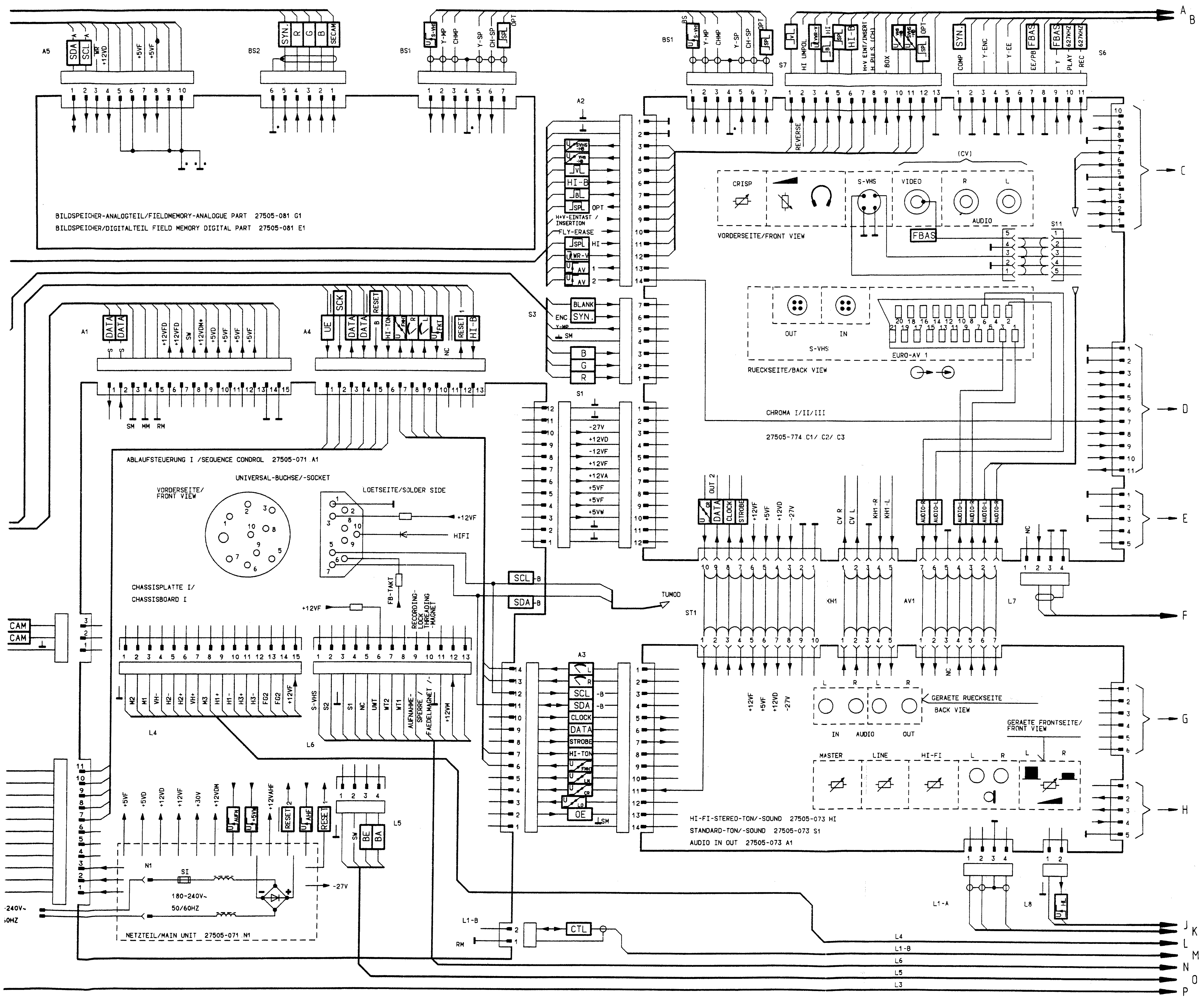
### Per disattivare la chiave elettronica:
Immettere il codice 4 9 3 4 sul telecomando e premere il tasto "OK".

| Codice | Funzione | Ind. nel display |
|---|---|---|
| 8500 | Chiave elettronica | A0 |
| * | Registrazione continua »AF« (prog. 1) | 1 |
| * | Registraz. continua »AV« | AV |
| * | Riprod. continua fino al valore indicato dal contanastro ad inizio funzione | A1 |
| 8510 | Inserimento impulso verticale »spento« | – |
| 8511 | Inserimento impulso verticale »acceso« | – |
| 8516 | Sezione "VIDEO 1" del telecomando (vedi istruzioni d'uso) | – |
| 8517 | Sezione "VIDEO 2" del telecomando (vedi istruzioni d'uso) | – |
| 8526 | Sezione "VIDEO 1" del telecomando (vedi istruzioni d'uso) | – |
| 8527 | Sezione "VIDEO 2" del telecomando (vedi istruzioni d'uso) | – |
| 8528 | Taratura del inserimento impulso verticale (vedi istruzioni d'uso) | A7 |
| 8546 | senza interlacciamento (312/313) - per TVC con frequenza verticale 50Hz | – |
| 8547 | con interlacciamento (312/312) - ad es. per TVC con frequenza verticale 100Hz | – |

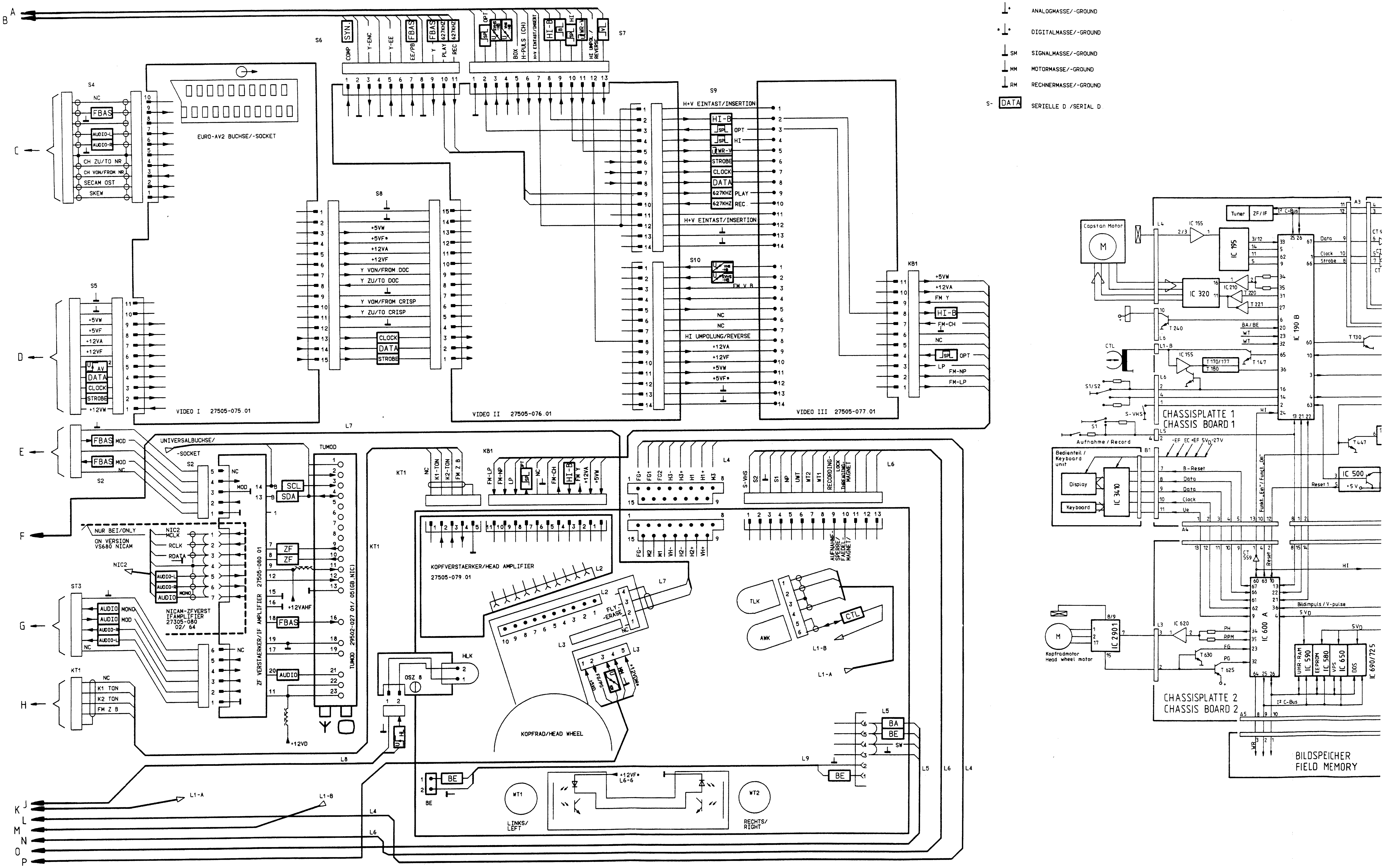
* Scelta della funzione tramite "MENU"

**Nota:**
Nella riproduz. di cassetta di qualità scadente, l'immagine può saltare oppure scorrere. Questo disturbo può essere evitato mediante attivaz. dell'impulso artificiale verticale.


BS2
A5
BS1
L3
+5VD
FG/PG
+12VDM*
MM
NIC1
+5VF
NICAM
A2
FLY -ERASE
H+V-EINTAST/INSERTION
OPT
HI
S3
BLANK
SYN.
FBAS
ENC
SM
ABLAUFSTEUERUNG/SEQUENCE CONTROL
DOS
CHASSISPLATTE II/CHASSISBOARD II 27505-072 A1
BILDSPEICHER-ANALOGTEIL/FIELDMEMORY-ANALOGUE PART 27505-081 G1
BILDSPEICHER/DIGITALTEIL FIELD MEMORY DIGITAL PART 27505-081 E1
A1
A4
SCK
DATA
RESET
UE
HI-B
HI-TON
VORDERSEITE/FRONT VIEW
CRISP
S-VHS
VIDEO
REVERSE
RUECKSEITE/BACK VIEW
OUT
IN
EURO-AV
CHROMA I/II/III
27505-774 C1/ C2/ C3
S1
-27V
+12VD
-12VF
+12VF
+12VA
+5VF
+5VW
SM MM RM
ABLAUFSTEUERUNG I /SEQUENCE CONDROL 27505-071 A1
UNIVERSAL-BUCHSE/-SOCKET
VORDERSEITE/ FRONT VIEW
LOETSEITE/SOLDER SIDE
+12VF
HIFI
FB-TAKT
CHASSISPLATTE I/
CHASSISBOARD I
RECORDING-LOCK THREADING-MAGNET
SCL
SDA
TUMOD
ST1
KH1
AV1
OUT 2
CLOCK
STROBE
CV R
CV L
KH1-R
KH1-L
NIC2-ZF-VERSTAERKER/IF AMPL
NIC2
MONO
AUDIO-R
AUDIO-L
RDATA
RCLK
MCLK
FERNBEDIENGEBER
/REMOTE CONTROL
27505-086 1
NICAM-DECODER NES 500
27505-040 01/ 02
NUR BEI /ONLY ON
VERSION VS680 NICAM
B2
CAM
L4
M2 M1 VH- H2- H2+ VH+ M3 H1+ H1- H3+ H3- FG2 FG2 +12VF
L6
S-VHS S2 S1 NC UWT WT2 WT1
AUFNAHME-SPERRE / FAEDELMAGNET /-
+12VW
A3
OE
IN AUDIO OUT
MASTER
LINE
HI-FI-STEREO-TON/-SOUND 27505-073 *I
STANDARD-TON/-SOUND 27505-073 S1
AUDIO IN OUT 27505-073 A1
B1
-EF
EC
+EF
+5VD
-27V
IR-EMPFAENGER/
IR RECEIVER
BEDIENEINHEIT/KEYBOARD UNIT 27505-078 01/ 02
180-240V~
50/60HZ
N1
SI
+30V
+12VAHF
NETZTEIL/MAIN UNIT 27505-071 N1
L5
SW
BE
BA
L1-B
RM
CTL
L4
L1-B
L6
L5
L3

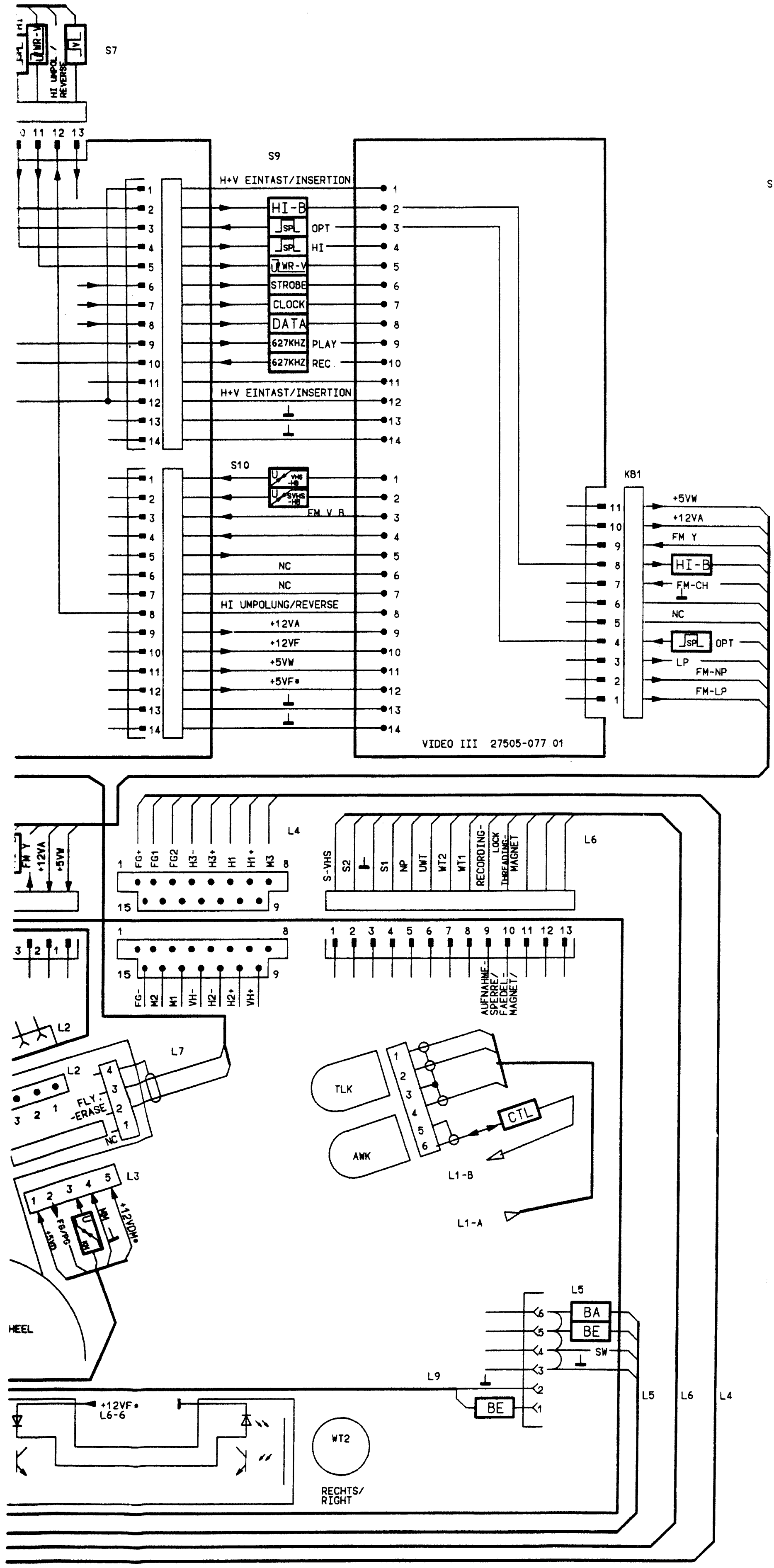

BILDSPEICHER-ANALOGTEIL/FIELDMEMORY-ANALOGUE PART 27505-081 G1
BILDSPEICHER/DIGITALTEIL FIELD MEMORY DIGITAL PART 27505-081 E1
A5
BS2
BS1
S7
S6
A2
A1
A4
S3
S1
A3
S11
ABLAUFSTEUERUNG I /SEQUENCE CONDROL 27505-071 A1
UNIVERSAL-BUCHSE/-SOCKET
VORDERSEITE/ FRONT VIEW
LOETSEITE/SOLDER SIDE
CHASSISPLATTE I/
CHASSISBOARD I
NETZTEIL/MAIN UNIT 27505-071 N1
180-240V~
50/60HZ
VORDERSEITE/FRONT VIEW
RUECKSEITE/BACK VIEW
S-VHS
EURO-AV 1
CHROMA I/II/III
27505-774 C1/ C2/ C3
GERAETE RUECKSEITE
BACK VIEW
GERAETE FRONTSEITE/
FRONT VIEW
MASTER
LINE
HI-FI
HI-FI-STEREO-TON/-SOUND 27505-073 HI
STANDARD-TON/-SOUND 27505-073 S1
AUDIO IN OUT 27505-073 A1
TUMOD
ST1
KH1
AV1
L1-A
L1-B
L4
L5
L6
L7
L8
CTL
CAM
A
B
C
D
E
F
G
H
J
K
L
M
N
O
P

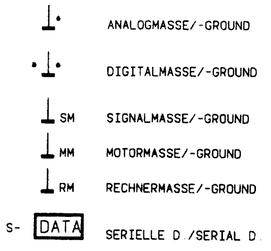
# Blockschaltplan
# Block circuit diagram
# Schema elettrico a blocchi

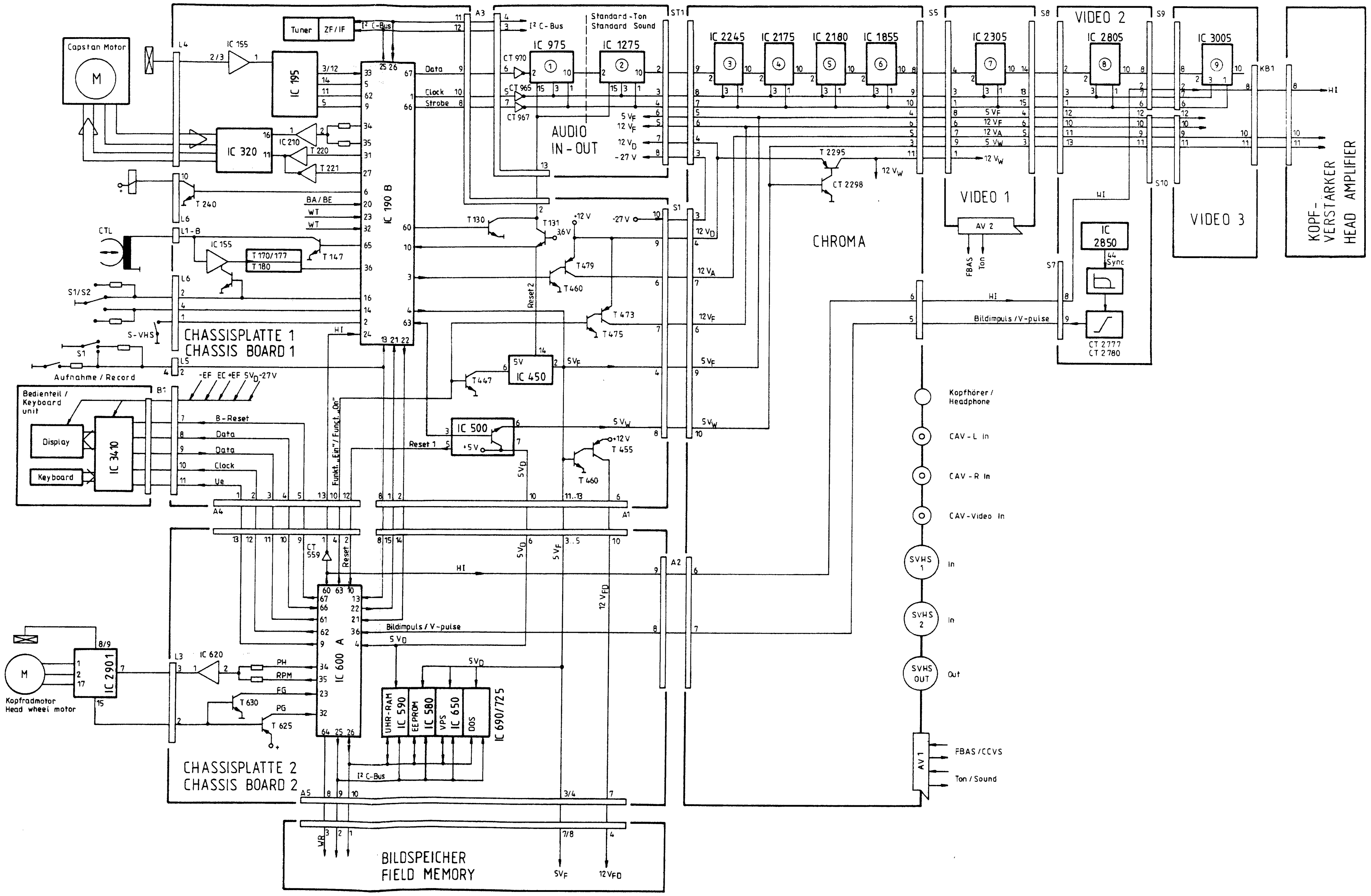

ANALOGMASSE/-GROUND
DIGITALMASSE/-GROUND
SIGNALMASSE/-GROUND
MOTORMASSE/-GROUND
RECHNERMASSE/-GROUND
SERIELLE D /SERIAL D
S4
S5
S6
S7
S8
S9
S10
S2
ST3
KT1
KB1
EURO-AV2 BUCHSE/-SOCKET
VIDEO I 27505-075.01
VIDEO II 27505-076.01
VIDEO III 27505-077.01
H+V EINTAST/INSERTION
HI UMPOLUNG/REVERSE
UNIVERSALBUCHSE/-SOCKET
NUR BEI/ONLY ON VERSION VS680 NICAM
NICAM-ZFVERST IFAMPLIFIER 27305-080 02/ 64
ZF VERSTAERKER/IF AMPLIFIER 27505-080 01
TUMOD
TUMOD 29502-027 01/ 05(GB,NIC)
KOPFVERSTAERKER/HEAD AMPLIFIER 27505-079 01
KOPFRAD/HEAD WHEEL
FLY-ERASE
HLK
OSZ 8
TLK
AWK
CTL
WT1
WT2
LINKS/LEFT
RECHTS/RIGHT
AUFNAHME-SPERRE/ FAEDEL-MAGNET/ THREADING LOCK MAGNET
FBAS
AUDIO-L
AUDIO-R
CH ZU/TO NR
CH VON/FROM NR
SECAM OST
SKEW
CLOCK
DATA
STROBE
SCL
SDA
ZF
+12VAHF
+12VD
Capstan Motor
IC 155
IC 195
IC 320
IC 190 B
Tuner
I²C-Bus
CHASSISPLATTE 1
CHASSIS BOARD 1
Bedienteil / Keyboard unit
Display
Keyboard
IC 3410
IC 500
Aufnahme / Record
Kopfradmotor Head wheel motor
IC 2901
IC 620
IC 600 A
Bildimpuls / V-pulse
UHR-RAM
IC 590
EEPROM
IC 580
VPS
IC 650
IC 690/725
CHASSISPLATTE 2
CHASSIS BOARD 2
BILDSPEICHER
FIELD MEMORY
A
B
C
D
E
F
G
H
J
K
L
M
N
O
P

**Blockschaltplan**
**Block circuit diagram**
**Schema elettrico a blocchi**

**Blocksc**
**Block ci**
**Schema**


S7
S9
H+V EINTAST/INSERTION
HI-B
OPT
HI
WR-V
STROBE
CLOCK
DATA
627KHZ
PLAY
REC
S10
FM V B
NC
HI UMPOLUNG/REVERSE
+12VA
+12VF
+5VW
+5VF*
KB1
+5VW
+12VA
FM Y
FM-CH
NC
LP
FM-NP
FM-LP
VIDEO III 27505-077 01
L4
L6
FG+
FG1
FG2
H3-
H3+
H1
H1+
M3
S-VHS
S2
S1
NP
WT2
WT1
RECORDING-LOCK
THREADING-MAGNET
M2
M1
VH-
H2+
H2-
VH+
AUFNAHME-SPERRE/FAEDEL-MAGNET
L2
L7
FLY-ERASE
L3
TLK
AWK
CTL
L1-B
L1-A
L5
BA
BE
SW
L9
+12VF*
L6-6
WT2
RECHTS/RIGHT
HEEL


ANALOGMASSE/-GROUND
DIGITALMASSE/-GROUND
SM SIGNALMASSE/-GROUND
MM MOTORMASSE/-GROUND
RM RECHNERMASSE/-GROUND
S- DATA SERIELLE D /SERIAL D


Capstan Motor
M
Tuner
ZF/IF
I² C-Bus
IC 155
IC 195
IC 320
IC 210
T 220
T 221
T 240
CTL
IC 155
T 170/177
T 180
T 147
S1/S2
S-VHS
S1
Aufnahme / Record
CHASSISPLATTE 1
CHASSIS BOARD 1
IC 190 B
Data
Clock
Strobe
BA/BE
WT
WT
HI
-EF EC +EF 5VD -27V
Bedienteil / Keyboard unit
Display
Keyboard
IC 3410
B-Reset
Data
Data
Clock
Ue
Funkt. „Ein“/Funct. „On“
A3
Standard-Ton
Standard Sound
IC 975
IC 1275
CT 970
CT 965
CT 967
AUDIO IN-OUT
T 130
T 131
T 479
T 460
T 473
T 475
Reset 2
IC 450
T 447
IC 500
Reset 1
T 455
T 450
ST1
IC 2245
IC 2175
IC 2180
IC 1855
T 2295
CT 2298
CHROMA
S5
IC 2305
VIDEO 1
AV 2
FBAS
Ton
S8
VIDEO 2
IC 2805
IC 2850
Sync
CT 2777
CT 2780
S7
HI
Bildimpuls / V-pulse
S9
IC 3005
KB1
VIDEO 3
S10
KOPF-VERSTAERKER
HEAD AMPLIFIER
Kopfhörer / Headphone
CAV-L In
CAV-R In
CAV-Video In
SVHS 1 In
SVHS 2 In
SVHS OUT Out
AV 1
FBAS/CCVS
Ton/Sound
A4
A1
A2
CT 559
Reset
IC 600 A
Kopfradmotor
Head wheel motor
IC 2901
IC 620
PH
RPM
FG
PG
T 630
T 625
UHR-RAM IC 590
EEPROM IC 580
VPS IC 650
OOS
IC 690/725
I² C-Bus
CHASSISPLATTE 2
CHASSIS BOARD 2
A5
BILDSPEICHER
FIELD MEMORY
5VF
12VFD

**Blockschaltplan (Ablaufsteuerung / Netzteil)**
**Block circuit diagram (Sequence control / Mains stage)**
**Schema elettrico a blocchi (Comando funzioni / alimentatore)**

## (D) Bedien-Einheit

**Funktionsübersicht:**
Die Bedieneinheit besteht aus folgenden Funktionsgruppen:

- 4 Bit Microcomputer
- Vakuum-Floureszenz-Displays (VFD)
- Erzeugung der Heizspannung für die VFD-Anzeige
- Treiberstufen für den VFD-Gitterscan
- Bedienfeld (Tastatur-Matrix)
- IR-Empfänger

### 1. 4 Bit Microcomputer

Der maskenprogrammierte 4-Bit Microcomputer IC 3410 hat folgende Aufgaben:

- Bearbeiten der von der Tastaturmatrix kommenden Funktionseingaben
- Decodieren der Infrarot- Fernbedienbefehle vom IR-Fernbedienempfänger
- Ansteuern der VFD-Anzeigen durch die internen Treiberstufen
- Bereitstellen des für die Erzeugung der Heizspannung erforderlichen Ansteuersignals (64 Hz)
- Kommunikation mit dem Ablaufrechner A (CIC 600) auf der Chassisplatte II über die seriellen Schnittstellen DATA ⇄, $\overline{SCK}$, UE

### 2. Vakuum-Floureszenz-Displays

Die beiden Displays arbeiten nach dem Prinzip einer direkt geheizten Röhrentriode, wobei der Heizfaden gleichzeitig als Kathode dient. An den Pins 1 und 2 der VFD-Anzeigen liegt eine Spannung von ca. -15V. Auf der Gegenseite der Heizfäden, Pins 35/36 (12-MT-29 GK) und die Pins 40/41 (B6-630 GK) wird die Spannung zwischen ca. -11V und ca. -19V im Takt von 64 Hz geschaltet. Wird der Spannungswert zwischen den Heizfäden der VFD-Anzeigen gemessen, ergibt sich ein Rechtecksignal mit einer Frequenz von 64 Hz und einem Spannungswert von ca. 6,5V...8V.

Die Displayansteuerung erfolgt im Zeit-Multiplexverfahren von 1:10, wobei die Display-Scanningfrequenz ca. 380 Hz beträgt. Die entsprechenden Symbole in den Anzeigen können nur leuchten, wenn gleichzeitig die Anoden und die zugehörigen Gitter positiver als die Kathoden sind.

Die Gitter 2G, 3G, 4G, 5G, 7G, 8G, 10G und 11G der beiden Displays werden jeweils einzeln durch einen Gitterscan des µC (IC 3410) über die Ausgangsports T1, T2, T4...T9 angesteuert. Des weiteren werden die Gitter 1G / 6G über Port T3 und die Gitter 9G / 12G über Port T0 angesteuert. An den Ausgangsports S0...S15 (IC 3410) erfolgt die Ausgabe der Anodensignale, wobei die Anoden (A...P) der VFD-Displays gleichzeitig parallel angesteuert werden.

**Beispiel:**
Symbol "T2" soll leuchten.

Die Ausgangsports T1 (Gitter 1G) und S15 (Anode P) müssen gleichzeitig auf +5V geschaltet werden.

Werden die Anoden und Gitter nicht angesteuert, so liegen sie über interne Pull-down-Widerstände an den Ports T0...T9 und S0...S15 auf ca. -27V. Ein Aufleuchten der nichtaktiven Symbole wird somit vermieden.

Die achtstufige Helligkeitssteuerung (Dimmerfunktion) erfolgt durch Verändern der Impulsbreite des Gitterscans bei konstanter Display-Scanningfrequenz an den Ports T0...T9. In der untersten Helligkeitsstufe beträgt die Impulsbreite ca. 35 µs gegenüber einer Impulsbreite von ca. 125 µs in der obersten Helligkeitsstufe.

## (GB) Keyboard Unit

**Functional Overview**
The Keyboard Unit consists of the following function groups:

- 4 Bit Micro Computer
- Vacuum Flourescent Display (VFD)
- Generating the Heater supply for the VFD-Display
- Driver Stages for the VFD-Grid Scan
- Control Field (Keyboard-Matrix)
- IR Receiver

### 1. 4 Bit Micro Computer

The mask programmed 4 Bit Micro Computer IC 3410 carries out the following tasks:

- Processing the incoming function inputs from the Keyboard matrix.
- Decoding the infrared remote control commands from the IR remote control receiver.
- Controlling the VFD indicators from the internal driver stages.
- Generating the required drive signals (64 Hz) for the generation of the heater voltage supply.
- Communicating with the Sequence Computer A (CIC 600) on the Chassis Panel II via the serial interface DATA ⇄, $\overline{SCK}$, UE.

### 2. Vacuum Flourescent Display

The two displays operate according to the principle of a directly heated triode valve in which the heating elements operate at the same time as the cathode. A voltage of approx. -15V is applied to Pins 1 and 2 of the VFD. At the other terminals of the heater filaments, Pins 35/36 (12-MT-29 GK) and Pins 40/41 (B6-630 GK), a voltage between approx. -11V and approx. -19V at a clock rate of 64 Hz is connected. If the voltage between the heater filaments in the VFD indicator is measured, a square wave signal at a frequency of 64Hz with a voltage of approx. 6.5V...8V will be obtained.

The display drive is carried out in Time-Multiplex Mode at a ratio of 1:10, in which the Display-Scanning frequency corresponds to approx. 380Hz. The appropriate symbols in the indicator can only be illuminated when, at the same time, the anodes and the grids belonging to them are more positive than the cathodes.

The grids 2G, 3G, 4G, 5G, 7G, 8G, 10G and 11G of both displays are driven individually from a grid scan circuit within the µC (IC 3410) via the output ports T1, T2, T4...T9. The other are driven from the grids 1G/6G via port T3 and the grids 9G/12G via Port T0. From the output ports S0...S15 (IC 3410) the anode signals are obtained, in which the anodes (A...P) of the VFD display are driven in parallel simultaneously.

**Example:**
The symbol "T2" should illuminate.

The output ports T1 (grid 1G) and S15 (anode P) must be switched at the same time to +5V. If the anodes and grid are not driven, these are connected via the internal Pull-Down resistors connected to the Ports T0...T9 and S0...S15 to approx. -27V. The non active symbols are thereby prevented from illuminating.

The eight stage brightness control (Dimmer Function) is accomplished by altering the pulse width of the Grid Scan which is at a constant Display-Scanning frequency from the Ports T0...T9. In the lowest brightness stage the pulse width is approx. 35 µs compared to a pulse width of approx. 125 µs in the highest brightness stage.

## (I) Unità di comando

**Prospetto delle funzioni:**
L'unità di comando è costituita dai seguenti gruppi di funzioni:

- microcomputer a 4 bit
- display fluorescenti a vuoto (VFD)
- generazione della tensione di filamento per l'indicazione VFD
- stadi pilota per l'alimentazione di griglia VFD
- campo di comando (matrice tastiera)
- ricevitore IR

### 1. Microcomputer

Il µC a 4 bit IC 3410 svolge le seguenti funzioni:

- elaborazione degli ordini della tastiera
- decodifica degli ordini del telecomando che giungono dal ricevitore a raggi infr.
- Comando delle indicazioni VFD tramite gli stadi pilota interni
- preparazione del segnale necessario alla generazione della tensione di filamento (64 Hz)
- comunicazione con il µC di comando A (CIC 600) sul telaio II tramite le linee DATA ⇄, $\overline{SCK}$ e UE.

### 2. Display fluorescenti a vuoto

I due display lavorano secondo il principio di un triodo a riscaldamento diretto dove il filamento funge contemporaneamente da catodo. Ai pin 1 e 2 delle indicazioni VFD si trova una tensione di ca. -15V. Sul lato opposto dei filamenti, pin 40/41 (B6-630 GK) viene applicata la tensione compresa tra ca. -11V e -19V alla cadenza di 64 Hz. Se il valore di tensione viene misurato tra i filamenti delle indicazioni VFD, si ottiene un segnale rettangolare con una frequenza di 64 Hz ed un valore di tensione di ca. 6,5V...8V. Il comando dei display avviene secondo il sistema a tempo multiplo di 1:10 dove la frequenza degli imp. scanning è intorno ai 380 Hz. I simboli dei display si accendono, solo quando gli anodi e le rispettive griglie sono più positivi rispetto ai catodi.

Le griglie 2G, 3G, 4G, 5G, 7G, 8G, 10G e 11G dei due display sono comandate singolarmente da uno scanner del µC (IC 3410) mediante le porte T1, T2, T4...T9. Al comando delle griglie 1G/6G provvede la porta T3 mentre per quello delle griglie 9G/12G è prevista la porta T0. Alle porte S0...S15 (IC 3410) avviene l'emissione dei segnali anodici ed al tempo stesso vengono comandati in parallelo gli anodi (A...P) dei display VFD.

**Esempio:**
Deve accendersi il simbolo "T2".

Le porte T1 (griglia 1G) e S15 (anodo P) devono venir commutate contemporaneamente a +5V. Se anodo e griglia non vengono pilotati, essi sono collegati alle uscite T0...T9 e S0...S15 mediante resistenze PullDown interne a ca. -27V. Si evita cosi l'accensione dei simboli inattivi.

Il comando della luminosità ad 8 stadi avviene mediante variazione della larghezza di impulso dello scanner di griglia con frequenza costante degli imp. scanning alle porte T0...T9. Per lo stadio di luminosità più basso è prevista una larghezza di impulso di ca. 35 µs mentre al più alto corrisponde un valore di ca. 125 µs.

### 3. Generazione della tensione di filamento per l'indicazione VFD

Alla porta PP0 di IC 3410, si trova un segnale rettangolare con una frequenza di ca. 64 Hz. Se questa porta si chiude a massa, T 3422 conduce. Per motivi di dimensionamento del partitore di tensione R 3417/R 3420 si ha una tensione di ca. -9,5V alle basi di T 3417/T 3418. T 3417 conduce ed i filamenti dei

### 3. Erzeugung der Heizspannung für die VFD-Anzeige

An PP0 des IC 3410 steht ein Rechtecksignal mit einer Frequenz von ca. 64 Hz. Schaltet das Port PP0 nach Masse, wird T 3422 leitend. Auf Grund der Dimensionierung des Spannungsteilers R 3417 / R 3420 stellt sich an den Basen von T 3417 / T 3418 eine Spannung von ca. –9,5V ein, T 3417 wird leitend und an den Heizfäden der Displays steht eine Spannung von ca. -11V. Schaltet das Port PP0 auf High (+5V), sperrt T 3422. An den Basen von T 3417 / T 3418 liegt eine Spannung von ca. –20V, T 3418 schaltet durch und versorgt die Heizfäden mit einer Spannung von ca. -19V.

### 4. Treiberstufen für den VFD-Gitterscan

Da durch Parallelschalten von Einzelgittern (1G/6G, 9G/12G) und durch große Gitterstrukturen (10G/11G) die Ports T0...T9 den benötigten Gitterstrom nicht mehr liefern können, benötigt man die externen Treiberstufen T 3445 / T 3441, T 3452 / T 3448, T 3460 / T 3456, T 3470 / T 3465. Soll z.B. das Gitter 11G angesteuert werden, muß das Port T8 auf High-Potential (+5V) stehen. T 3470 / T 3465 werden leitend und schalten die Spannung $+5V_D{}^*$ an das Gitter 11G. Wird das Gitter 11G nicht aktiviert, liegt es über R 3166 an -27V.

### 5. Bedienfeld (Tastatur-Matrix)

Die Tastatur (8 x 5 Matrix) arbeitet im Scanningtakt-Verfahren. Der Scanningtakt ist High-aktiv (+5V) und wird an den Ports P 30... P 33, P 60... P63 ausgegeben. Über die Ports P40...P43 und P50 erkennt der µC wenn eine Taste der Tastatur-Matrix betätigt wird. Die eingegebenen Tastaturbefehle werden im µC verarbeitet und anschließend über die serielle Schnittstelle dem Ablaufrechner A auf der Chassispltte II übermittelt.

### 6. IR-Empfänger

Bei IC 3425 handelt es sich um einen selektiven, geregelten IR-Vorverstärker mit integrierter IR-Fotodiode. Der Vorverstärker wandelt das empfangene Infrarot-Licht (940 nm) in elektrische Impulse um. Diese werden anschließend verstärkt, demoduliert und stehen an IC 3425-(2) als Impulsfolge mit TTL-Pegel zur Verfügung. Über den Interrupt-Eingang INTO des IC 3410 wird die TTL-Impulsfolge zur weiteren Decodierung und Verarbeitung in den µC eingelesen und über die serielle Schnittstelle dem Ablaufrechner A zugeführt.

### 3. Generating the Heater Voltage for the VFD Indicator

On the PP0 output of IC 3410 a rectangular signal at a frequency of approx. 64 Hz is present. When the Port PP0 is switched to chassis, the transistor T 3422 conducts. Due to the values chosen for the voltage divider R 3417/ R 3420, a voltage of approx. -9.5V is applied to the bases of T 3417/T 3418. The transistor T 3417 conducts and the heater filaments of the displays receive a voltage of approx. -11V. When the port PP0 is switched to high (+5V), the transistor T 3422 switches off. A voltage of approx. -20V is applied to the bases of T 3417/ T 3418, transistor T 3418 conducts and feeds a voltage of approx. -19V to the heater filaments.

### 4. Driver Stages for the VFD Grid Scan

As the individual grids (1G/6G, 9G/12G) are connected in parallel and because of the very large grid structures (10G/11G), the ports T0...T9 cannot provide the grid current necessary. For this reason, external driver stages T 3445/T 3441, T 3452/T 3448, T 3460/T 3456, T 3470/ T 3465 are required. Should, for example, grid 11G be driven, the port T8 must be at a high potential (+5V). The transistors T 3470/ T 3465 conduct and switches the $+5V_D{}^*$ to the grid 11G. If the grid 11G is not activated, this is connected to -27V via R 3166.

### 5. Control Fields (Keyboard-Matrix)

The Keyboard (8 x 5 Matrix) operates in scanning clock mode. The scanning clock is active - HIGH (+5V) which is fed out from the Ports P30...P33, P60...P63. From the Ports P40...P43 and P50 the µC identifies which button on the Keyboard matrix has been depressed. The incoming command from the Keyboard is processed in the µC and then transfered via the Serial Interface to the Sequence Computer on the Chassis Panel II.

### 6. IR-Receiver

The IC 3425 is a selective, gain controlled IR preamplifier with integrated IR Photodiode. The preamplifier converts the received infrared light (950 nm) into electrical pulses. These are then amplified, demodulated and are present on IC 3425-(2) in a pulse sequence at TTL level for processing. From the Interrupt input INTO of IC 3410 the TTL pulse sequence is read into the µC for further decoding and processing and subsequently fed via the serial interface to the Sequence Computer A.

display risulta una tensione di ca. -11V. Se la porta PP0 diventa High (+5V), T 3422 si blocca. Alle basi di T 3417/T 3418 si trova una tensione pari a ca. -20V, T 3418 va in conduzione ed alimenta i filamenti con una tensione di ca. -19V.

### 4. Stadi pilota per l'alimentazione di griglia VFD

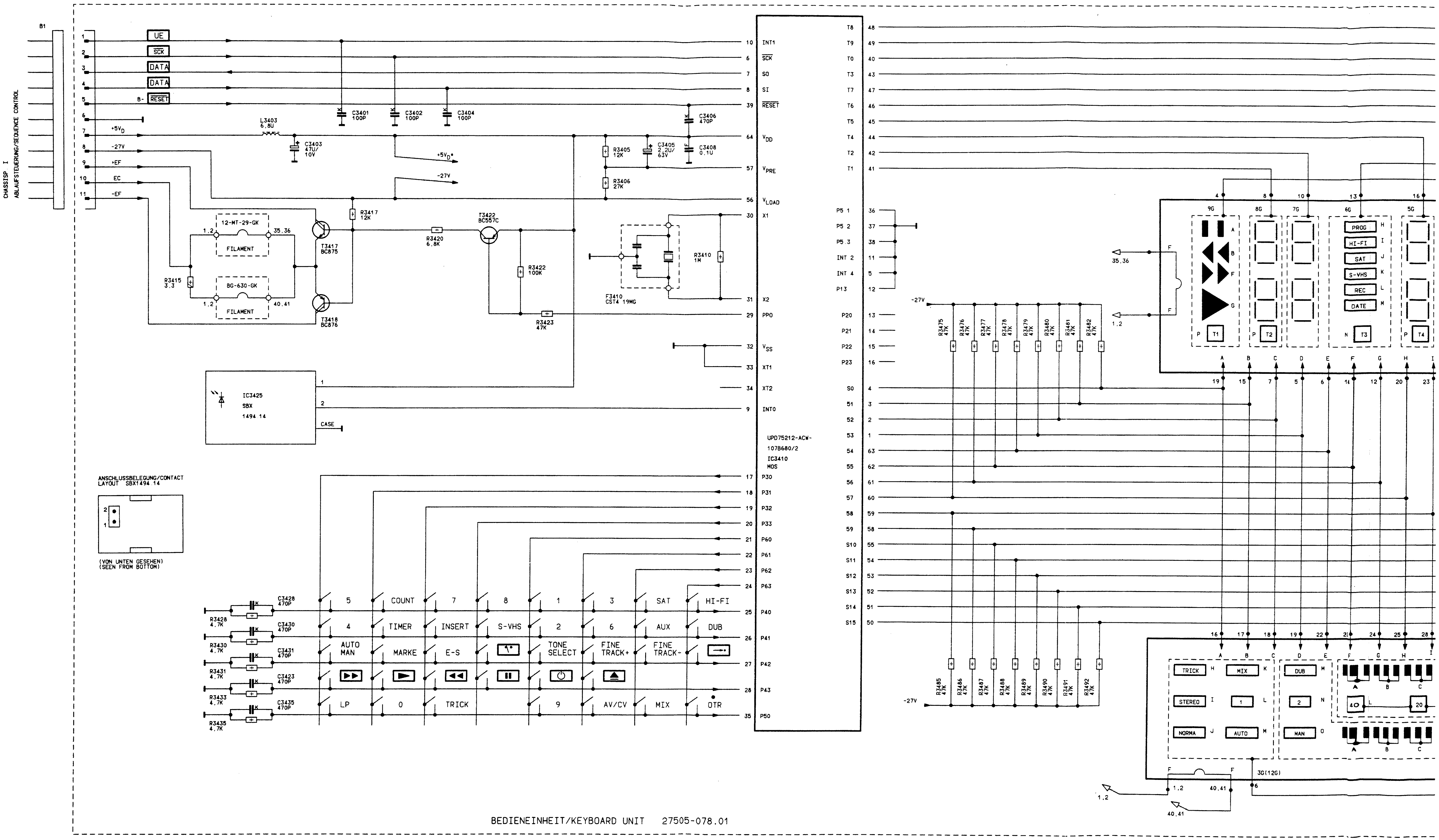
Poichè in seguito alla commutazione parallela di singole griglie (1G/6G, 9G/12G) ed alle ampie strutture a griglia disponibili (10G/11G), le porte T0...T9 non possono più fornire la corrente di griglia necessaria, è richiesto l'impiego degli stadi pilota esterni T 3445/T 3441, T 3452/T 3448, T 3460/T3456, T 3470/T 3465. Se, per es., deve essere comandata la griglia 11G, la porta T8 deve trovarsi su potenziale High (+5V). T 3470/T 3465 conducono e commutano la tensione $+5V_D{}^*$ sulla griglia 11G. Se tale griglia non viene attivata, essa si trova a –27V tramite R 3166.

### 5. Tastiera

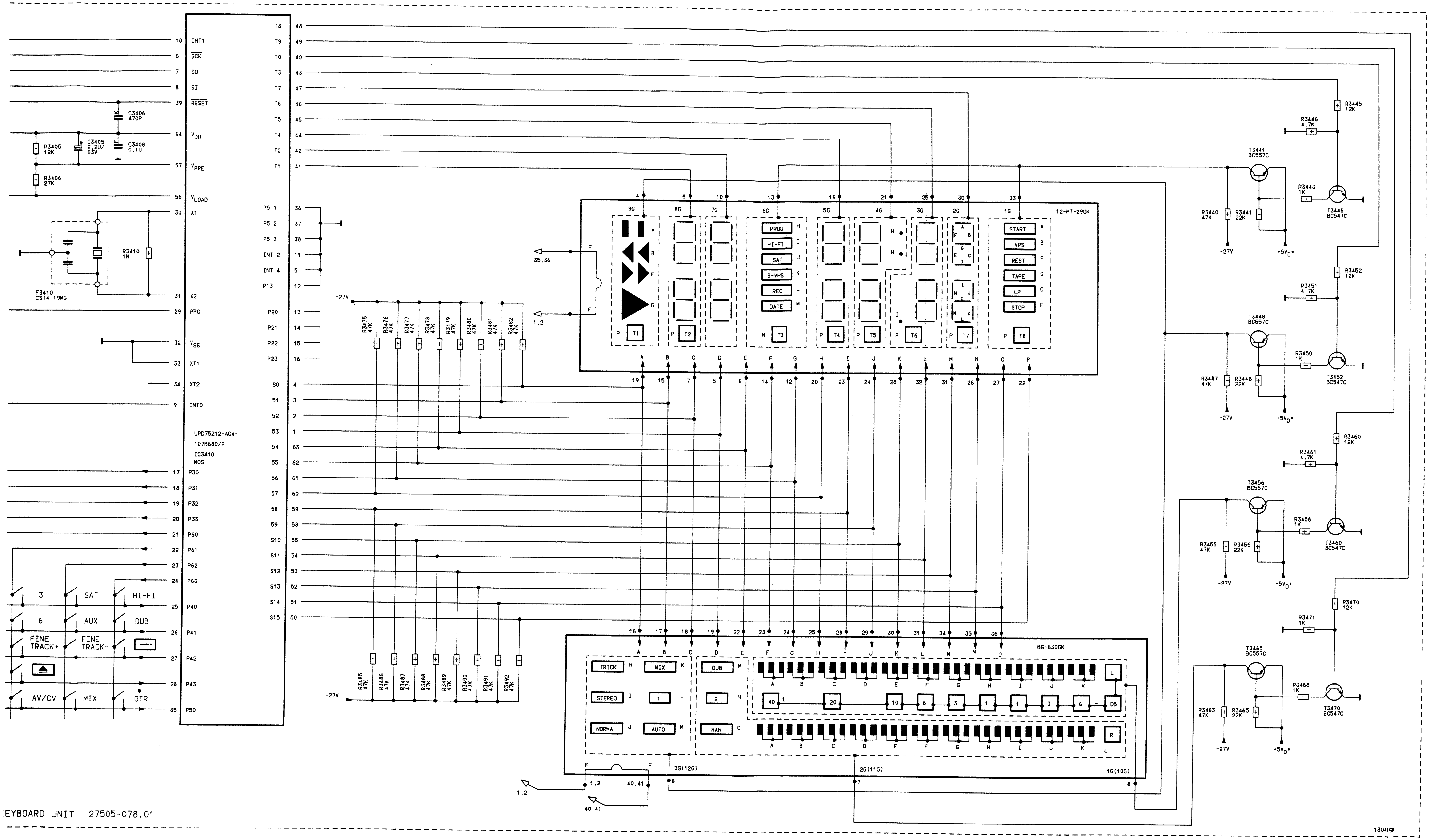
La tastiera (matrice 8 x 5) funziona sec. il sistema ad imp. scanning. Il ciclo scanning è attivo con HIGH (+5V) e viene fornito alle porte P30 ...P33, P60...P63. Mediante le porte P40...P43 e P50, il µC riconosce quando viene premuto un tasto nella matrice della tastiera. Gli ordini provenienti dalla tastiera vengono elaborati nel µC ed infine, attraverso l'interfaccia seriale, trasmessi al calcolatore A sul telaio II.

### 6. Ricevitore IR

Il C.I. 3425 è un preamplificatore a raggi infr. selettivo controllato con un fotodiodo IR integrato. Il preamplif. trasforma la luce infr. (940 nm) in impulsi elettrici. Questi impulsi vengono poi amplificati, demodulati ed applicati ad IC 3425-(2) come sequenza di impulsi con livello TTL. Attraverso l'ingresso INTO di IC 3410, tale sequenza viene immessa nel µC per la successiva decodifica ed elaborazione e per mezzo dell'interfaccia seriale inviata al calcolatore A.

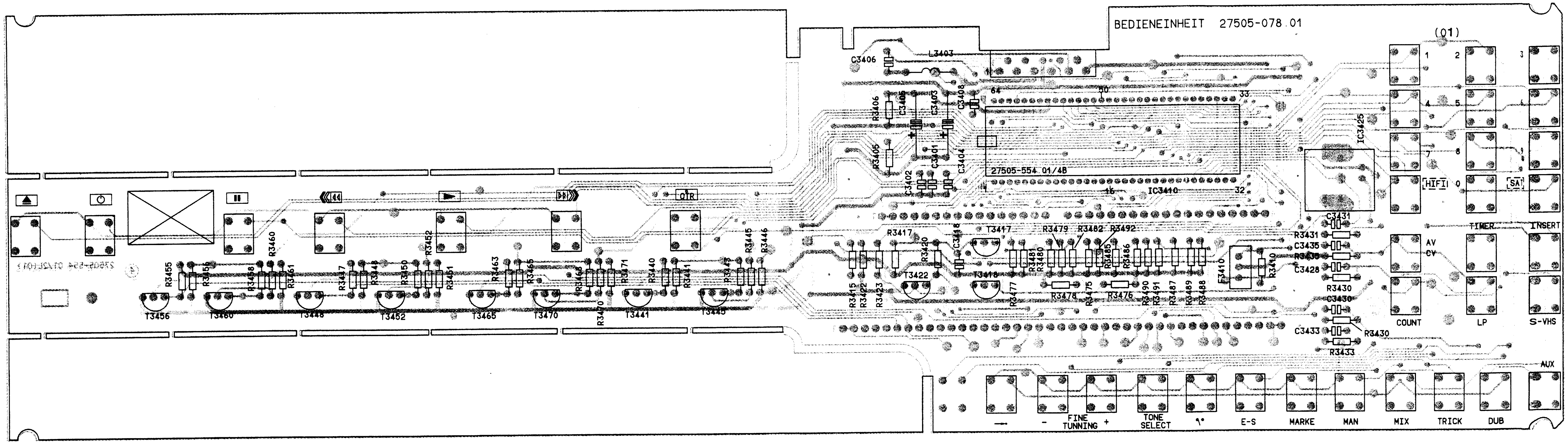

B1
CHASSISP I
ABLAUFSTEUERUNG/SEQUENCE CONTROL
UE
SCK
DATA
DATA
B- RESET
+5V_D
-27V
+EF
EC
-EF
L3403
6,8U
C3401
100P
C3402
100P
C3404
100P
C3403
47U/
10V
+5V_D*
-27V
C3406
470P
R3405
12K
C3405
2,2U/
63V
C3408
0,1U
R3406
27K
R3417
12K
12-MT-29-GK
FILAMENT
8G-630-GK
FILAMENT
1,2
35,36
40,41
R3415
3,3
T3417
BC875
T3418
BC876
R3420
6,8K
T3422
BC557C
R3422
100K
R3423
47K
R3410
1M
F3410
CST4 19MG
IC3425
SBX
1494 14
CASE
ANSCHLUSSBELEGUNG/CONTACT
LAYOUT SBX1494 14
(VON UNTEN GESEHEN)
(SEEN FROM BOTTOM)
INT1
SCK
SO
SI
RESET
V_DD
V_PRE
V_LOAD
X1
X2
PPO
V_SS
XT1
XT2
INTO
UPD75212-ACW-
107B680/2
IC3410
MOS
P30
P31
P32
P33
P60
P61
P62
P63
P40
P41
P42
P43
P50
T8
T9
T0
T3
T7
T6
T5
T4
T2
T1
P5 1
P5 2
P5 3
INT 2
INT 4
P13
P20
P21
P22
P23
S0
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
C3428
470P
R3428
4,7K
C3430
470P
R3430
4,7K
C3431
470P
R3431
4,7K
C3423
470P
R3433
4,7K
C3435
470P
R3435
4,7K
5
COUNT
7
8
1
3
SAT
HI-FI
4
TIMER
INSERT
S-VHS
2
6
AUX
DUB
AUTO
MAN
MARKE
E-S
TONE
SELECT
FINE
TRACK+
FINE
TRACK-
LP
0
TRICK
9
AV/CV
MIX
OTR
R3475 47K
R3476 47K
R3477 47K
R3478 47K
R3479 47K
R3480 47K
R3481 47K
R3482 47K
R3485 47K
R3486 47K
R3487 47K
R3488 47K
R3489 47K
R3490 47K
R3491 47K
R3492 47K
35,36
1,2
F
9G
8G
7G
6G
5G
P
T1
T2
N
T3
T4
PROG
HI-FI
SAT
S-VHS
REC
DATE
TRICK
MIX
DUB
STEREO
1
2
NORMA
AUTO
MAN
40
20
3G(12G)
40,41

BEDIENEINHEIT/KEYBOARD UNIT 27505-078.01


UPD75212-ACW-
107B680/2
IC3410
MOS
INT1
SCK
SO
SI
RESET
VDD
VPRE
VLOAD
X1
X2
PPO
VSS
XT1
XT2
INTO
P30
P31
P32
P33
P60
P61
P62
P63
P40
P41
P42
P43
P50
T8
T9
T0
T3
T7
T6
T5
T4
T2
T1
P5 1
P5 2
P5 3
INT 2
INT 4
P13
P20
P21
P22
P23
C3406 470P
C3405 2,2U/ 63V
C3408 0,1U
R3405 12K
R3406 27K
R3410 1M
F3410 CST4 19MG
3
SAT
HI-FI
6
AUX
DUB
FINE TRACK+
FINE TRACK-
AV/CV
MIX
OTR
-27V
R3475 47K
R3476 47K
R3477 47K
R3478 47K
R3479 47K
R3480 47K
R3481 47K
R3482 47K
R3485 47K
R3486 47K
R3487 47K
R3488 47K
R3489 47K
R3490 47K
R3491 47K
R3492 47K
35,36
1,2
12-MT-29GK
9G
8G
7G
6G
5G
4G
3G
2G
1G
PROG
HI-FI
SAT
S-VHS
REC
DATE
START
VPS
REST
TAPE
LP
STOP
T1
T2
T3
T4
T5
T6
T7
T8
BG-630GK
TRICK
MIX
DUB
STEREO
1
2
NORMA
AUTO
MAN
40
20
10
6
3
1
1
3
6
DB
L
R
3G(12G)
2G(11G)
1G(10G)
40,41
R3445 12K
R3446 4,7K
T3441 BC557C
R3443 1K
T3445 BC547C
R3440 47K
R3441 22K
-27V
+5VD*
R3452 12K
R3451 4,7K
T3448 BC557C
R3450 1K
T3452 BC547C
R3447 47K
R3448 22K
R3460 12K
R3461 4,7K
T3456 BC557C
R3458 1K
T3460 BC547C
R3455 47K
R3456 22K
R3470 12K
R3471 1K
T3465 BC557C
R3468 1K
T3470 BC547C
R3463 47K
R3465 22K
KEYBOARD UNIT 27505-078.01
130419

**Bedieneinheit**
**Keyboard unit**
**Unitá di comando**

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes


BEDIENEINHEIT 27505-078.01
(01)
27505-554 01/48
IC3410
IC3425
L3403
C3406
R3406
C3405
C3403
C3408
C3401
C3404
C3402
R3405
R3417
T3417
R3479
R3482
R3492
C3418
R3420
T3422
T3418
R3415
R3422
R3423
R3477
R3478
R3476
R3475
R3481
R3480
R3485
R3486
R3490
R3491
R3487
R3489
R3488
F3410
R3410
C3431
R3431
C3435
C3428
R3430
C3430
C3433
R3433
R3455
R3456
R3458
R3460
R3461
R3447
R3448
R3450
R3452
R3451
R3463
R3465
R3471
R3440
R3441
R3445
R3446
R3470
T3456
T3460
T3448
T3452
T3465
T3470
T3441
T3445
QTR
1
2
3
4
5
6
7
8
9
0
HIFI
SA
TIMER
INSERT
AV
CV
COUNT
LP
S-VHS
AUX
-
FINE TUNNING
+
TONE SELECT
E-S
MARKE
MAN
MIX
TRICK
DUB

## Bedieneinheit
## Keyboard unit
## Unitá di comando

## D Netzteil

### 1. Primärseite

In dem freischwingenden Sperrwandlernetzteil übernimmt der IC 355 die Ansteuerung und Überwachung des MOS-Leistungstransistors T 375 sowie alle notwendigen Regelungs- und Überwachungsfunktionen. Über Pin 1 erhält IC 355 vom Optokoppler OK 367 die Information über die Größe der sekundärseitigen 12V-Spannung. Die Stromversorgung des IC 355 erfolgt an Pin 6 bis zum Erreichen der Einschaltschwelle über R 377/R 378. Nach dem Anlauf wird die Versorgungsspannung über D 369 aus der Trafowicklung 1, 2 gewonnen. Die Serienschaltung von Primärwicklung 3, 5 und T 375 liegt an der gleichgerichteten Netzspannung (GL395/C395). Während der Leitphase des Transistors wird Energie im Tafo gespeichert und in der Sperrphase über die Sekundärwicklungen abgegeben. Der IC 355 regelt über die Frequenz und die Einschaltdauer des T 375 die übertragene Energie so, daß die Sekundärspannungen weitgehend unabhängig von Netzspannung und Last stabil bleiben. Die dazu nötige Regelinformation wird über den Optokoppler gewonnen. Außerdem erfolgt an IC 355-(8) die Nulldurchgangsdetektion über R 365 und die Wicklung 2, 1.

**Überspannungs- und Überlastschutz**

Treten Überspannungen auf, spricht die Speisespannungsüberwachung über IC 355-(6) an und unterbricht die Ansteuerung des T 375. Ist nach Wiederanlauf weiterhin Überspannung vorhanden, wiederholt sich der ganze Vorgang ("Abfragevorgang"). Bei einem Kurzschluß der Sekundärspannungen regelt IC 355 mittels der Kollektorstromnachbildung (Pin 2) auf einen sich wiederholenden Abfragezustand und begrenzt somit die Leistung.

**Netzunterspannung**

Im IC 355 arbeitet über Pin 3 eine Schutzschaltung gegen Netzunterspannung. Den Ansprechwert bestimmen R 355 und R 357.

### 2. Sekundärseite

### 2.1 Spannungsversorgung

Aus den Spannungen an den Wicklungsanschlüssen 12/13/14 erzeugt man über D 410/D 415 die nullsymmetrischen Heizspannungen +EF und -EF für die Bedienteildisplays. Aus der Spannung an Wicklungsanschluß 11 leitet man über D 425 die Abstimmspannung +30V für den TuMod ab. Des weiteren wird aus dieser Wicklung über D 423 eine -27V-Spannung gebildet, die der Bedienteilrechner benutzt, um nicht benötigte Elektroden (Gitter, Anode) der Displays zu sperren. Die Wicklung 16/15 liefert die Spannung für den Flußwandler. Dieser erzeugt aus ihr in Abhängigkeit vom Statusbefehl "+F EIN" die Spannung + $5V_F$. Aus der Wicklung 9, 10 entnimmt man über D 463 die Spannungen $+12V_{DM}$ (Laufwerk) und $+12V_D$. Letztere benötigt man zum einen für alle Schaltungsstufen, die immer in Funktion sind und zum anderen, funktionsbezogen geschaltet, für die verschiedenen Betriebsarten. Diese Schalter bestehen aus Transistorstufen, die in Abhängigkeit von den Statusbefehlen der Ablaufsteuerungen durchschalten. Aus der von Wicklung 7/15 am Stabilisator-IC 500 anstehenden Spannung bildet dieser die $5V_D$-Spannung und in Abhängigkeit vom Befehl "+W EIN" die Spannung + $5V_W$.

### 2.2 RESET-Impulserzeugung

IC 450 und IC 500 erzeugen beim Einschalten des Videorecorders LOW-aktive Reset-Impulse von ca. 10ms Dauer für die Ablaufsteuerungen 1 und 2. Gleichzeitig unterdrücken sie während des Resets über die Dioden D 477, D 482/D 490/D 506 die von der Ablaufsteuerung anstehenden Schaltpegel.

## GB Mains stage

### 1. Primary Side

In the free running Blocking Oscillator Mains Stage IC 355 carries out the drive and monitoring of the MOS Power Transistor T 375 and also all necessary control and monitoring functions. On Pin 1 the IC 355 receives information from the Opto Couple OK 367 on the amplitude of the 12V Voltage on the secondary side. The current supply to the IC 355 is on Pin 6 via R 377/R 378 until the switch on level is reached. After starting up, the supply voltage is obtained via D 369 from the transformer winding 1, 2. The series circuit consisting of the primary winding 3, 5 and T 375 is connected to the rectified mains voltage (GL 395, C 395). During the conducting phase of the transistor, energy is stored in the transformer and in the switching off phase the energy is transferred into the secondary windings. IC 355 controls the energy transferred by altering the frequency and the switching period of T 375 so that the secondary voltages are held constant irrespective of the mains voltage and load. The control information required for this is obtained via the Opto Couple. In addition, the zero cross over detection is carried out on IC 355-(8) via R 365 and the winding 2,1.

**Overvoltage and Overload Protection**

If an overvoltage condition occurs, the supply voltage monitoring circuit responds via IC 355-(6) and interrupts the drive to the T 375. If the overvoltage condition is still present after restart, this process is repeated ("Sensing Process"). With a short circuit on the secondary voltages, the IC 355, in combination with the collector current simulation (Pin 2), takes up a repeated scanning state and limits the power.

**Mains Undervoltage**

In IC 355 a safety circuit for mains undervoltages operates via Pin 3. The threshold value is determined by R 355 / R 357.

### 2. Secondary Side

### 2.1 Supply voltages

The zero symmetrical heating voltages, +EF and -EF, for the Keyboard Display are generated by D 410/D 415 from the voltages induced into winding connections 12/13/14. From the voltage induced into the winding connection 11, the tuning voltage +30V for the TuMod is obtained via D 425. Additionally, from this winding, a -27V Voltage is generated by D 423, which is used by the Control Stage computer to switch off the electrodes (grid, anode) of the Display which are not required. The windings 16/15 provides the voltage for the Current Converter. This generates, depending upon the Status Command "+F ON", the voltage $+5V_F$. The voltages $+12V_{DM}$ (Mechanics) and $+12V_D$ are obtained via D 463 from the winding 9, 10. Lastly, a supply voltage is required for those circuit stages which are always in operation, and also required are supplies for those stages which are used only for certain functions. For these differing operating modes, a switch consisting of transistor stages is activated depending upon the status command from the Sequence Control.

From the voltage induced into winding 7/15, the stabilising IC 500 produces the $5V_D$ Voltage and, depending upon the command "+W ON", the supply $+5V_W$.

### 2.2 RESET-Pulse Generation

IC 450 and IC 500 generate, when switching on the Video Recorder, a Low-active RESET Pulses of approx. 10ms duration for the Seqence Controls 1 and 2. Simultaneously, during the period of the reset, any switching levels presented by the Sequence Control are suppressed by the diodes D 477, D 482/D 490/D 506.

## I Alimentatore

### 1. Lato primario

In questo alimentatore con convertitore ad interdizione, l´integrato IC 355 effettua il comando ed il controllo del transistor MOS di potenza T375 come anche tutte le funzioni di regolaz. e di controllo necessarie. Mediante il pin 1 esso riceve dall´optoaccoppiatore OK367 l´informazione inerente al valore della tensione secondaria 12V. L´alimentaz. dell´IC355 avviene al pin 6 finchè viene raggiunta la soglia di funzionam. mediante le R 377 e R 378. Dopo l´innesco, la tensione di alimentaz. viene ottenuta tramite il D369 dall´avvolgimento 1, 2 del trasduttore. Il circuito in serie composto dall´avvolgimento primario 3, 5 e dal T375 è alimentato dalla tensione raddrizzata di rete (GL 395/C395). Durante la fase di conduz. del transistor, nel trasformatore viene accumulata energia che viene successivamente ceduta agli avvolgimenti secondari durante la fase di interdizione. L´IC 355 controlla l´energia trasmessa tramite la frequenza e la durata d´inserzione di T375 in modo che le tensioni secondarie rimangano ampiamente stabili indipendentemente dalla tensione di rete e dal carico. L´informaz. di regolaz. per questo necessaria viene ottenuta con l´optoaccoppiatore. Inoltre, al pin 8 avviene un controllo del passagio per lo zero tramite R 365 e l´avvolgimento 2, 1.

**Protezione contro sovratensioni e sovraccarichi.**

In caso di sovratensioni interviene il circuito di controllo della tensione d´alimentazione in IC 355-(6) ed interrompe il pilotaggio del T 375. Se dopo il nuovo innesco la sovratensione persiste, si ripete il processo da capo.

In caso di cortocircuito delle tensioni secondarie, mediante simulazione della corrente di collettore (pin 2) l´integ. IC 355 dà luogo ad un processo di controllo che limita la potenza.

**Abbassamento della tensione**

Contro tali variazioni al pin 3 di IC 355 interviene una sezione protettiva. La soglia di intervento è determinata da R 355 e R 357.

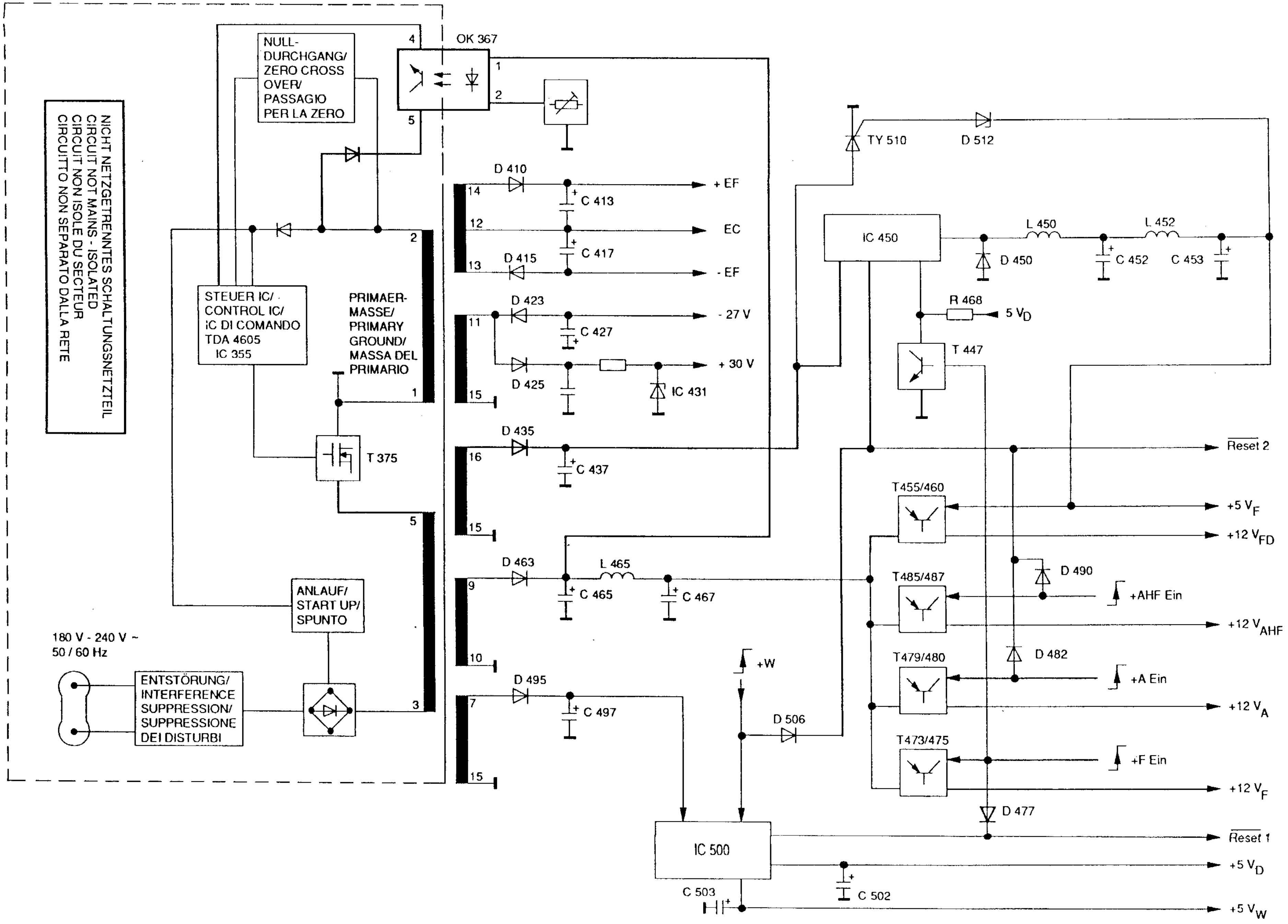
### 2. Lato secondario

### 2.2 Tensioni di alimentazione

Dalle tensioni disponibli agli avvolgimenti 12/13/14, mediante D 410 e D 415 vengono prodotte le tensioni +EF e -EF simmetriche rispetto allo zero necessarie all´alimentazione del display nel modulo di comando. Dalla tensione dell´avvolgimento il si ricava col D 425 la tensione di sintonia +30V per il TuMod. Inoltre dallo stesso avvolgimento viene prodotta una tensione di -27V mediante il D 423. Essa serve al calcolatore del mod. di comando per bloccare gli elettrodi non utilizzati (griglia, anodo) del display. L´avvolgimento 16/15 fornisce la tensione per il trasduttore di flusso da cui esso ricava dipendentemente dal comando "+F EIN" la tensione $+5V_F$. Dall´avvolgimento 9, 10 vengono prodotte le tensioni $+12V_{DM}$ e $12V_D$ attraverso D 463. L´ultima è utilizzata per tutti gli stadi commutazione che sono sempre attivi ed inoltre, a seconda della funzione scelta, per i vari tipi di funzionamento. Questo commutatori sono in realtà dei transistor i quali intervengono a seconda dei comandi inviati dal mod. comando funz. Dalla tensione proveniente dall´avvolgimento 7/15 allo stabilizzatore IC 500 viene ottenuta la tensione $+5V_D$ e dipendentemente dall´ordine "+W EIN" la tensione $+5V_W$.

### 2.2 Formazione dell´impulso RESET

IC 450 e IC 500 generano in fase di accensione del videoregistratore impulsi Reset Low attivi con durata di ca. 10ms per le unità di comando funzioni 1 e 2. Contemporaneamente, durante la fase Reset, mediante i diodi D 477, D 482/D 490/D506, ossi soprimono il livello di commutazione del mod. comando funzione.


NICHT NETZGETRENNTES SCHALTUNGSNETZTEIL
CIRCUIT NOT MAINS - ISOLATED
CIRCUIT NON ISOLE DU SECTEUR
CIRCUITO NON SEPARATO DALLA RETE
NULL-DURCHGANG/ ZERO CROSS OVER/ PASSAGIO PER LA ZERO
OK 367
4
5
1
2
STEUER IC/ CONTROL IC/ IC DI COMANDO TDA 4605 IC 355
PRIMAER-MASSE/ PRIMARY GROUND/ MASSA DEL PRIMARIO
T 375
ANLAUF/ START UP/ SPUNTO
180 V - 240 V ~
50 / 60 Hz
ENTSTÖRUNG/ INTERFERENCE SUPPRESSION/ SUPPRESSIONE DEI DISTURBI
3
14
12
13
11
15
16
9
10
7
D 410
C 413
+ EF
EC
C 417
D 415
- EF
D 423
C 427
- 27 V
D 425
+ 30 V
IC 431
D 435
C 437
D 463
L 465
C 465
C 467
D 495
C 497
TY 510
D 512
IC 450
L 450
L 452
D 450
C 452
C 453
R 468
5 V_D
T 447
Reset 2
T455/460
+5 V_F
+12 V_FD
T485/487
D 490
+AHF Ein
+12 V_AHF
T479/480
D 482
+A Ein
+12 V_A
T473/475
+F Ein
+12 V_F
+W
D 506
D 477
IC 500
Reset 1
+5 V_D
C 502
C 503
+5 V_W

## D Abgleich

**Meßgerät:** Digitalvoltmeter

## GB Alignment

**Test equipment:** Digital voltmeter

## I Taratura

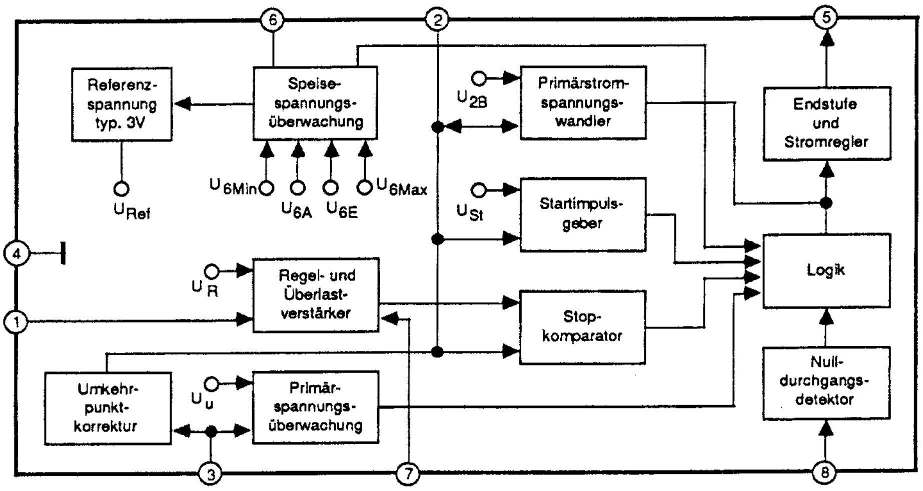
**Strumenti:** Digitalvoltmetro

| D Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| +12 $V_D$ | Digitalvoltmeter :<br>(S 1-9) MP ▽1 | Wiedergabe | R 406 (+12 V) | Spannung auf 12V ± 0,1V einstellen. |

| GB Alignment | Preparation | Cassette Operating mode | Alignment with | Frequency, voltage, instructions |
|---|---|---|---|---|
| +12 $V_D$ | Digital voltmeter :<br>(S 1-9) MP ▽1 | Playback | R 406 (+12 V) | Adjust voltage to 12V ± 0.1V. |

| I Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| +12 $V_D$ | Digitalvoltmetro :<br>(S 1-9) pun. mis. ▽1 | Riproduzione | R 406 (+12 V) | Regolare la tensione 12V ± 0,1V. |

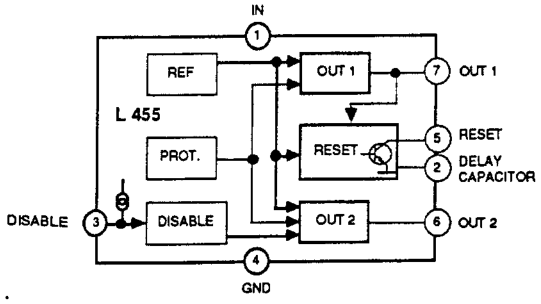
**TDA 4605:**



6
2
5
Referenz-spannung typ. 3V
Speise-spannungs-überwachung
$U_{2B}$
Primärstrom-spannungs-wandler
Endstufe und Stromregler
$U_{Ref}$
$U_{6Min}$
$U_{6A}$
$U_{6E}$
$U_{6Max}$
$U_{St}$
Startimpuls-geber
4
Logik
$U_R$
Regel- und Überlast-verstärker
1
Stop-komparator
Null-durchgangs-detektor
Umkehr-punkt-korrektur
$U_u$
Primär-spannungs-überwachung
3
7
8

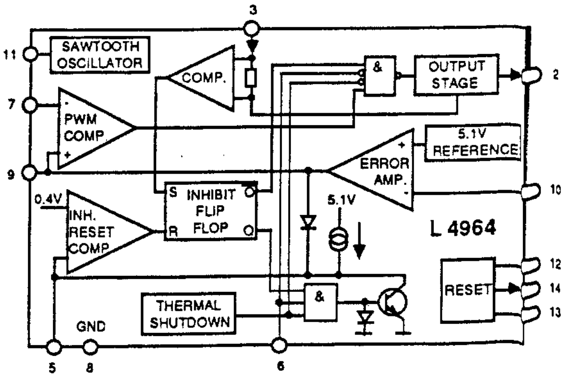
| D | GB | I |
|---|---|---|
| Endstufe und Stromregler | Output stage and current control | Stad. finale e regol. di corr. |
| Logik | Logic | Logica |
| Nulldurchgangs-Detektor | Zero cross-over detector | Rivelat. pass. per lo zero |
| Primärspannungs-Überwachung | Primary voltage monitoring | Controllo tens. primaria |
| Primärstrom-Spannungswandler | Primary current-voltage converter | Trasdutt. in tens. di corr. prim. |
| Referenzspannung | Reference voltage | Tensione di riferimento |
| Regel- und Überlastverstärker | Control and overload amplifier | Amplif. regol. di sovraccarico |
| Speisespannungsüberwachung | Supply voltage monitoring | Contr. tens. di alimentaz. |
| Startimpulsgeber | Start pulse generator | Trasmett. impulso di start |
| Stop-Komparator | Stop comparator | Comparatore di start |
| Umkehrpunktkorrektur | Reversal point correction | Correz. punto di ritorno |

**L 455:**

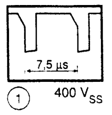


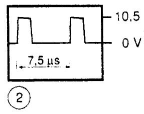
IN
1
REF
OUT 1
7
OUT 1
L 455
PROT.
RESET
5
RESET
2
DELAY CAPACITOR
DISABLE
3
DISABLE
OUT 2
6
OUT 2
4
GND

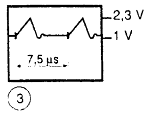
**L 4964:**

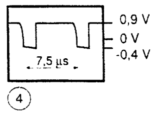


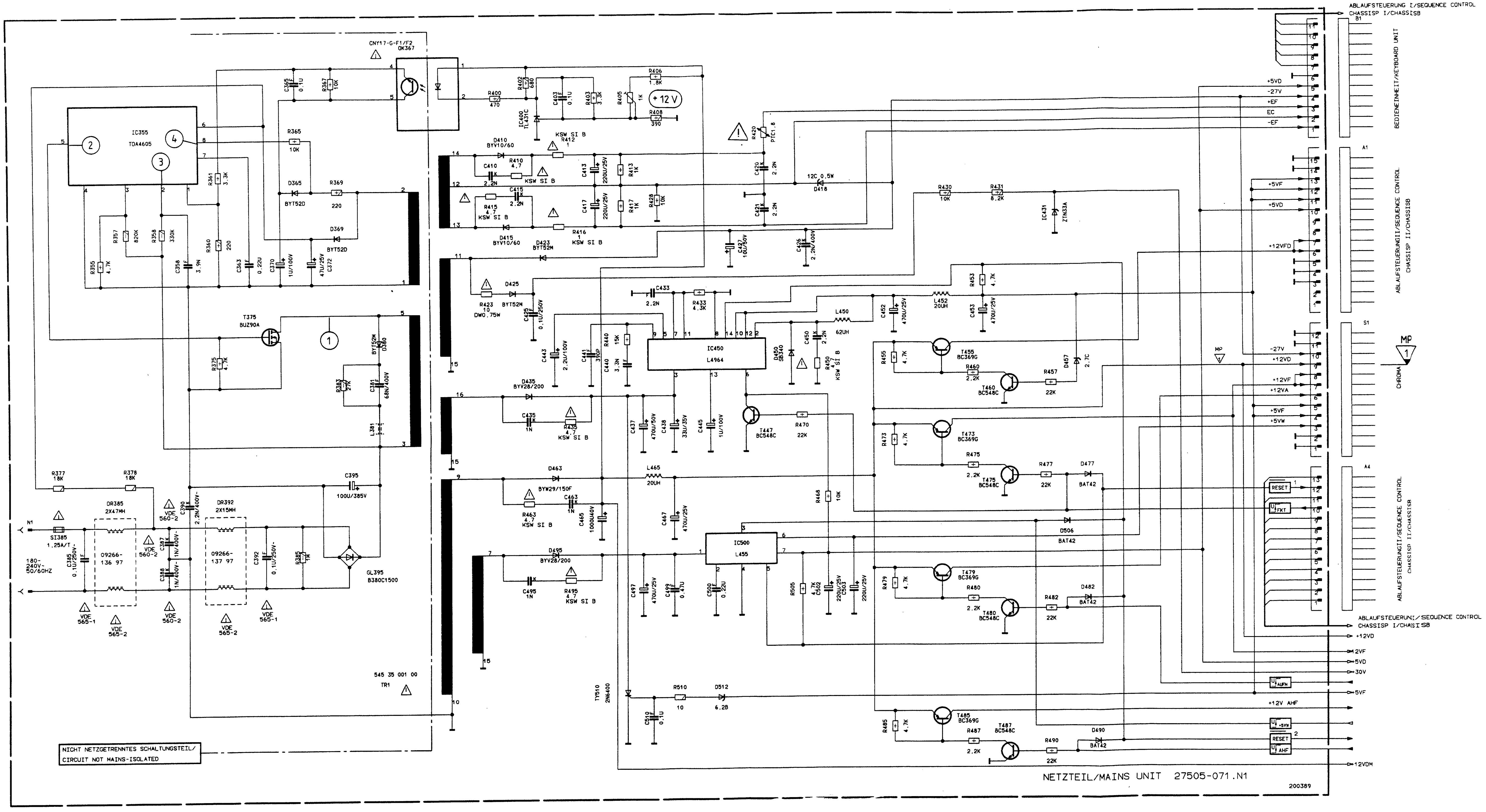
3
11
SAWTOOTH OSCILLATOR
COMP.
&
OUTPUT STAGE
2
7
PWM COMP
5.1V REFERENCE
9
ERROR AMP.
0.4V
S INHIBIT FLIP FLOP R
5.1V
10
INH. RESET COMP
L 4964
RESET
12
14
13
&
THERMAL SHUTDOWN
GND
5
8
6










ABLAUFSTEUERUNG I/SEQUENCE CONTROL CHASSISP I/CHASSISB
BEDIENEINHEIT/KEYBOARD UNIT
ABLAUFSTEUERUNGII/SEQUENCE CONTROL CHASSISP II/CHASSISB
CHROMA
MP
IC355 TDA4605
CNY17-G-F1/F2 OK367
T375 BUZ90A
IC450 L4964
IC500 L455
T447 BC548C
T455 BC369G
T460 BC548C
T473 BC369G
T475 BC548C
T479 BC369G
T480 BC548C
T485 BC369G
T487 BC548C
IC400 TL431C
IC431 ZTK33A
TY510 2N6400
SI385 1,25A/T
180-240V~ 50/60HZ
N1
DR385 2X47MH
DR392 2X15MH
09266-136 97
09266-137 97
GL395 B380C1500
C395 100U/385V
VDE 560-2
VDE 565-1
VDE 565-2
545 35 001 00 TR1
+12 V
+5VD
-27V
+EF
EC
-EF
+5VF
+12VFD
+12VD
+12VF
+12VA
+5VW
RESET
U_FKT
U_AUFN
U_+5VW
U_AHF
+12V AHF
+12VDM
2VF
5VD
30V
5VF
NICHT NETZGETRENNTES SCHALTUNGSTEIL/ CIRCUIT NOT MAINS-ISOLATED
NETZTEIL/MAINS UNIT 27505-071.N1
200389

Spannungen und Oszillogramme gemessen bei Wiedergabe und einer Netzspannung von 220V.
Voltage levels and oscillograms measured in playback mode at a mains voltage of 220V.
Tensioni ed oscillogrammi misurati in riproduzione con una tensione di rete di 220V.

## Chassisplatte I - Netzteil
## Chassis board I - Mains stage
## Piastra telaio I - Alimentatore

### VDE (IEC) -Hinweise:

- Anschlußdrähte der Bauteile im Netzspannung führenden Schaltungsteil dürfen auf der Lötseite nicht mehr als 4,5 mm überstehen!
- Nach der Reparatur Netzteilabschirmung unbedingt wieder anbringen!
- Im Servicefall gemäß den VDE-/IEC-Richtlinien ausschließlich das zum Gerät gehörende Netzkabel verwenden!

### Notes on VDE (IEC) safety

- The connecting wires of components carrying Mains Voltage in the Power Supply Stage must not extend beyond the solder side by more than 4.5 mm!
- After repair, the Mains Stage screening must always be refitted!
- In repair, to conform with the VDE/IEC Specification it is imperative that the correct Mains Cable for the machine is used.

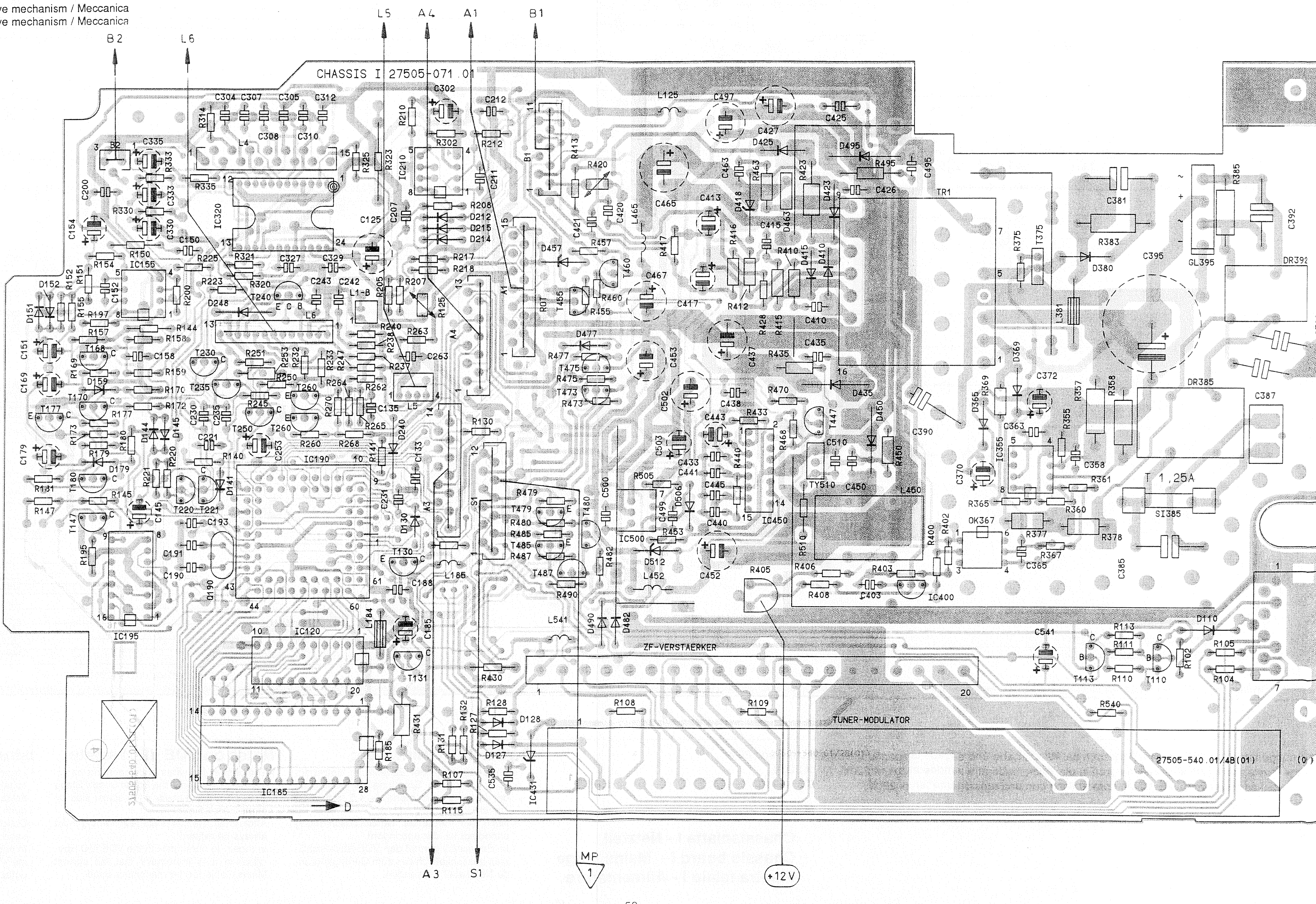
### Istruzioni VDE (IEC):

- I terminali dei componenti nella sezione circuitale che fornisce tensione di rete, sul lato saldature non possono sporgere più di 4,5 mm!
- Dopo la riparazione è assolutamente necessario riapplicare l'isolaz. sull'alimentatore!
- In caso di servizio, conformemente alle norme VDE/IEC impiegare solo il cavo di rete, in dotazione all'apparecchio.

## Chassisplatte I / Chassis board I / Piastra telaio I

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes

A 1 - Chassisplatte II / Chassis board II / Piastra telaio II
A 3 - Audio IN / OUT
A 4 - Chassisplatte II / Chassis board II / Piastra telaio II
B 1 - Bedieneinheit / Keyboard unit / Unità di comando
B 2 - Camera
L 5 - Laufwerk / Drive mechanism / Meccanica
L 6 - Laufwerk / Drive mechanism / Meccanica


L5
A4
A1
B1
B2
L6
CHASSIS I 27505-071.01
IC320
IC210
IC155
IC190
IC120
IC185
IC195
IC355
IC450
IC500
IC400
IC431
TR1
TY510
OK367
GL395
DR392
DR385
SI385
T 1,25A
L450
ZF-VERSTAERKER
TUNER-MODULATOR
27505-540.01/48(01)
(01)
ROT
D
A3
S1
MP
1
+12V

# (D) Chassisplatte I Ablaufsteuerung I

**Funktionsübersicht**

Der Microcomputer B SDA 2087, IC 190, bildet das Kernstück der Ablaufsteuerung I. Er übernimmt die gesamte Bandservo-Regelung, Bus- und Laufwerksteuerung. Die Vielzahl der Aufgaben des Microcomputers machten es erforderlich, die Kapazität der externen Programmspeicher zu erhöhen. Dazu benötigt man die ICs IC 120 und IC 185 (Speicher).

Im Standby-Betrieb wird die Ablaufsteuerung I bis auf den Capstanmotor-Treiber IC 320 abgeschaltet. Der Datenverkehr zwischen den einzelnen Funktionsgruppen und der Ablaufsteuerung II findet über 3 verschiedene Datenbus-Systeme statt.

a) I$^2$C-Bus-B

Der I$^2$C-Bus ist ein bidirektionaler Zweileiterbus, bestehend aus der SDA-B (System-Daten)-Leitung, IC 190-(26) und der SCL-B (System-Clock)-Leitung, IC 190-(25). Beide liegen über die Widerstände R 127 und R 128 an +5V$_F$. Der Datenverkehr wird vom IC 190, der auch den Systemtakt SCL-B erzeugt, gesteuert.

b) Serielle Schnittstelle zur Ablaufsteuerung II

Für den Datenverkehr mit der Ablaufrechner A, CIC 600 auf der Chassisplatte II, wird die serielle Schnittstelle IC 190-(21), -(22) verwendet.

c) Serieller Bus zur Port-Erweiterung

Da für die vielen Aufgaben des Ablaufrechners B die Anzahl der Ausgangsports nicht genügt, ist eine Porterweiterung erforderlich. Dazu benutzt man einen seriellen Bus, der aus den Leitungen DATA, IC 190-(67), CLOCK, IC 190-(1) und STROBE, IC 190-(66), besteht. Über die Leitungen DATA und CLOCK werden Daten in Schieberegister mit seriellem Eingang und parallelem Ausgang geladen und durch die über die STROBE-Leitung kommenden Übernahmeimpulse auf die Ausgänge der Schieberegister geschaltet.

**Die Ablaufsteuerung I ist in folgende Funktionsgruppen unterteilt:**

1. Reset / Netzteilansteuerung
2. Steuerung von Schacht, Fädelmechanik und Schaltern
3. Wickeltachoimpulsverarbeitung
4. Bandanfang -/ Bandende-Erkennung
5. Bandservoregelung
6. Trackingregelung
7. Fehlererkennung
8. Einschalten von HiFi-Anlagen

### 1. Reset / Netzteilansteuerung

Nach dem Anstecken des Recorders ans Netz, erhält der Ablaufrechner B an IC 190-(10) den Resetimpuls RESET 2, der vom Netzteil erzeugt wird. Dabei wird zuerst der Ablaufrechner A auf der Chassisplatte II durch den Resetimpuls RESET 1 zurückgesetzt. Nach dessen Initialisierung schaltet er die Funktionsspannung U∫FKT ein, die ihrerseits den Resetimpuls RESET 2 erzeugt. Wenn der Ablaufrechner B initialisiert ist und er das Laufwerk in Position Stop oder Cassette gebracht hat, meldet er über die serielle Schnittstelle IC 190-(21),-(22) dem Ablaufrechner A (CIC 600) seine Ruheposition. Wird keine Funktionstaste betätigt oder keine Cassette geladen, schaltet der Ablaufrechner A den Ablaufrechner B ab. Wird eine Funktion gewählt, schaltet zunächst der Ablaufrechner A den Ablaufrechner B über die Schaltspannung U∫FKT ein. Anschließend gibt der Ablaufrechner B je nach gewählter Funktion die Schaltspannungen U∫+5VW, U∫AHF oder U∫AUFN frei.

# (GB) Chassis panel I Sequence control I

**Functional Overview**

The Micro Computer B SDA 2087, IC 190, forms the heart of the Sequence Control I. It has complete responsibility of the Tape Servo-Control, Bus and Mechanics Drive. The mulitude of tasks required of the Micro Computer makes it necessary for the capacity of the external Programme Memory to be increased. For this the ICs IC 120 and IC 185 (Memory) are required. In Stand-By Mode the Sequence Control I, including the Capstan Motor Drive IC 320, is switched off. The Data traffic between the individual Function Groups and the Sequence Control II is carried via three different Data Bus Systems.

a) I$^2$C Bus-B

The I$^2$C Bus is a bidirectional two lead Bus consisting of the SDA-B (System-Data)-Lead, IC 190-(26) and the SCL-B (System Clock)-Lead, IC 190-(25). Both are connected via the resistors R 127 and R 128 to the +5V$_F$ Supply. The Data traffic is controlled from IC 190 which also generates the System Clock SCL-B.

b) Serial Interface to the Sequence Control II

A Serial Interface IC 190-(21), -(22) is used for the data traffic with the Sequence Computer A, CIC 600 on the Chassis Panel II.

c) Serial Bus for Port-Expansion

As there are insufficient Output Ports for the multitude of functions required of the Sequence Computer B, a Port expansion circuit is necessary. For this use is made of a serial Bus, which consists of the leads DATA, IC 190-(67), CLOCK, IC 190-(1) and STROBE, IC 190-(66). The data is loaded into a shift register with serial inputs and parallel outputs via the DATA and Clock leads and, with the STROBE-Lead carrying the Transfer pulse, is switched to the outputs of the Shift Register.

**The Sequence Control I is divided into the following Function Groups:**

1. Reset / Mains Stage Control
2. Controlling the Compartment, Loading Mechanics and Switches
3. Winding Tachopulse Processing
4. Beginning of tape-/End of tape Identification
5. Tape Servo control
6. Tracking Control
7. Fault Identification
8. Switching on of HiFi Installations

### 1. Reset / Mains Stage Control

After plugging the Recorder into the Mains, the Sequence Computer B receives on IC 190-(10), the Reset Pulse (RESET 2) generated by the Mains Stage. Before this the Sequence Computer A on the Chassis Panel II is first reset by the Reset Pulse RESET 1. After it has initialised, the Function Voltage U∫FKT is switched on which in turn generates the Reset Pulse RESET 2. When the Sequence Computer B is initialised and after it has driven the mechanics into the STOP or Cassette position, it informs the Sequence Computer A (CIC 600) via the Serial Interface IC 190-(21), -(22) that it is now in a quiescent position. If a function button has not been depresssed or if no cassette has been loaded, the Sequence Computer A switches the Sequence Computer B off. If a function is selected, the Sequence Computer A first of all switches the Sequence Computer B on by activating the Switching Voltage U∫FKT. Subsequently, the Sequence Computer B produces the switching voltages U∫+5VW, U∫AHF or U∫AUFN according to the selected function.

# (I) Piastra telaio I Comando funzioni I

**Prospetto delle funzioni**

Il cuore del comando funzioni I è costituito dal µC SDA 2087, IC 190, che provvede a tutta la servoregolazione e al comando delle linee bus e delle funzioni meccaniche. Il gran numero dei compiti che il µC deve svolgere ha reso necessario aumentare la capacità della memoria di programma esterna. Per questo vengono utilizzate le memorie IC 120 e IC 185. In funzionamento Standby, il modulo comando I viene bloccato fino al pilota del motore capstan IC 320. Lo scambio dei dati tra i singoli gruppi di funzioni ed il modulo comando II ha luogo attraverso 3 differenti sistemi di bus dati.

a) Bus I$^2$C - B

Il bus I$^2$C è un bus bidirezionale a due linee che è formato dalla linea dati SDA-B, IC 190-(26), e dalla linea clock SCL-B, IC 190-(25). Entrambe queste linee sono collegate a +5V$_F$ attraverso le resistenze R 127 e R 128. Lo scambio dei dati viene comandato da IC 190 che produce anche il sistema clock SCL-B.

b) Interfaccia seriale per il comando funzioni II

Per lo scambio dei dati con il µC del comando funzioni A (CIC 600) sulla piastra telaio II, viene impiegata un'interfaccia seriale IC 190-(21), -(22).

c) Bus seriale per l'ampliamento delle porte

Poichè per il gran numero di compiti svolti dal µC del comando funzioni B, le porte disponibili in uscsita non sono sufficenti, è necessario che esse vengano ampliate. Per questo si utilizza un bus seriale formato delle linee DATA, IC 190-(67), CLOCK, IC 190-(1) e STROBE, IC 190-(66). Attraverso le linee DATA e CLOCK, i dati vengono caricati nel registro a scorrimento con entrata seriale ed uscita in parallelo e per mezzo degli impulsi di prelievo provenienti dalla linea STROBE applicati alle uscite.

**Il Comando funzioni è suddiviso nei seguenti gruppi di funzioni:**

1. Reset / comando alimentatore
2. Comando vano cassetta, meccanica caricamento nastro e interruttori
3. Impulsi tachimetrici
4. Riconiscimento inizio/fine nastro
5. Regolazione servonastro
6. Regolazione tracking
7. Identificazione dei difetti
8. Accensione di impianti HiFi

### 1. Reset / comando alimentatore

Dopo il collegamento del videoregistratore alla rete, il µC di comando B riceve al pin 10 di IC 190 l'imp. RESET 2 prodotto dall'alimentatore. In questo caso, per prima cosa avviene il reset del µC di comando A sul telaio II mediante l'imp. RESET 1. Dopo la sua inizializzazione esso inserisce la tensione d'alimentazione U∫FKT, che a sua volta produce l'impulso RESET 2. Quando il µC di comando B è inizializzato ed ha portato la meccanica in pos. stop o cassetta, esso comunica la sua condizione di riposo al microcomputer A(CIC 600) mediante l'interfaccia seriale IC 190–(21). Se non viene premuto alcun tasto o la cassetta manca, il µC di comando A esclude il µC B. Se viene scelta una funzione, il µC della sezione A ripristina dapprima il microcomputer B mediante la tensione di commutazione U∫FKT. Infine il microcomputer B, in base alla funzione scelta, abilita le tensioni di commutazione U∫+5VW, U∫AHF o U∫AUFN.

## 2. Steuerung von Schacht/Fädelmechanik und Schaltern

### 2.1 Schacht senken

Beim Einschieben einer Cassette in den Cassettenschacht öffnet der Schiebeschalter SW (Schalterstellung 2). Der µC erhält an IC 190-(13) einen HIGH-Pegel und steuert über die Pins 27, 31, 34, 35 und IC 210 die Capstan-Endstufe (IC 320) und damit den Capstanmotor an. Dieser führt über die Getriebeverkopplung alle mechanischen Bewegungen aus (Schacht-, Fädel- und Wickelbetrieb). Die Ansteuerung erfolgt solange, bis der Schiebeschalter SW die Stellung 3 erreicht und die Schachtmechanik ausrastet.

### 2.2 Schacht heben

Nach Drücken der Taste ⏏ gibt der IC 190 an den Pins 27, 31, 34 und 35 eine entsprechende Steuerspannung für die Capstan-Endstufe (IC 320) aus. Der Capstanmotor hebt den Cassettenschacht solange, bis der Schiebeschalter SW die Schalterstellung 1 erreicht. Der µC erhält an IC 190-(13) einen LOW-Pegel und schaltet ab.

### 2.3 Fädelmechanik- und Schaltersteuerung

Die Fädelmechaniksteuerung erfolgt durch die Schalter S1/S2 nach den nachfolgend gezeigten Spannungsdiagrammen. Die an den Spannungsverläufen angegebenen Pegel erhält der µC über die Pins 14 (S1) und 16 (S2). Nach Drücken einer Bedientaste steuert er über die Pins 27, 31, 34 und 35 die Capstan-Endstufe (IC 320). An IC 320-(1), -(3) und -(23) stehen daraufhin die Ansteuerspannungen für den Capstanmotorwicklungen.

## 2. Controlling the Compartment / Loading Mechanics and Switches

### 2.1 Lowering the Compartment

Inserting a cassette into the compartment causes the sliding switch SW to open (switch position 2). The µC receives a High level on IC 190-(13) and drives the Capstan Motor via the Capstan Output stage (IC 320) from Pins 27, 31, 34, 35 and IC 210. The Capstan Motor produces all the mechanical movements via the gear drive system (compartment-,loading- and winding operations).

The drive continues until the sliding switch SW reaches Position 3 and the compartment mechanics is disengaged.

### 2.2 Raising the Compartment

After ⏏ Button has been depressed, the IC 190 provides on Pins 27, 31,34 and 35 the required drive voltages for the Capstan-Output Stage (IC 320). The capstan motor raises the compartment until the sliding switch SW reaches Position 1. The µC receives a Low level on IC 190-(13) and switches off.

### 2.3 Loading Mechanics and Switch Control

The loading mechanics control is carried out by the switches S1/S2 as shown in the following voltage diagrams. The voltage sequence, at the levels given, are received by the µC on Pins 14 (S1)and 16 (S2). After a function button has been depressed, the Computer drives the Capstan-Output Stage (IC 320) via pins 27, 31, 34 and 35. Therefore, the required drive voltages for the Capstan Motor windings are present on IC 320-(1), -(3) and -(23).

## 2. Comando vano cassetta, meccanica di caricamento nastro e interuttori

### 2.1 Abbassamento del vano

Quando nel vano viene inserita una cassetta, l'interruttore SW (pos. 2) si apre. Il µC riceve al pin 13 di IC 190 un livello HIGH e comanda mediante i pin 27, 31, 34, 35 ed IC 210 lo stadio finale del capstan e quindi il motore capstan. Questo motore effettua tutti i movimenti meccanici (funzioni del vano, caricamento ed avvolgimento del nastro). Il comando del motore funziona finchè l'interruttore SW raggiunge la posizione 3 per cui la meccanica del vano si sgancia.

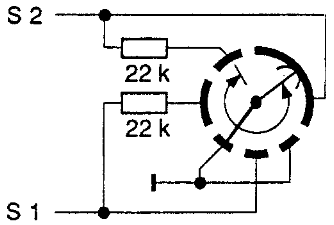
### 2.2 Sollevamento del vano

Premendo i tasto ⏏ , IC 190 fornisce ai pin 27, 31, 34 e 35 la tensione per lo stadio finale del capstan (IC 320). Il motore capstan solleva il vano finchè l'interruttore SW è in posizione 1. Il µC riceve un livello LOW al pin 13 di IC 190 e si spegne.

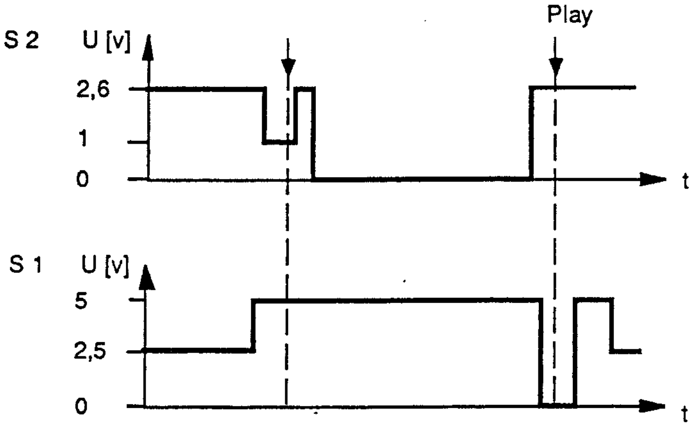
### 2.3 Meccanica di caricamento nastro e comando interruttori

Il comando della meccanica di caricamento del nastro avviene mediante gli interruttori S1/S2 secondo il seguente diagramma delle tensioni. I livelli indicati nel diagramma giungono al µC attraverso i Pin 14 (S1) e 16 (S2). Azionando un tasto di funzione, il µC guida lo stadio finale del capstan (IC 320) per mezzo dei pin 27, 31, 34 e 35. Ai pin 1, 3 e 23 di IC 320 si trovano quindi le tensioni per il motore del capstan.

Funktionswahlschalter / Mode select switch /
Selettore di funzioni
S 1 / S 2



Cassettenschacht unten /
Cassette compartment lowered /
Vano cassetta abbassato



### 2.4 Fädelmagnetsteuerung

Der Fädelmagnet dient dazu die Fädelmechanik im Laufwerk einzurasten. Hierfür erhält T 240 über IC 190-(6) einen von der Stellung der Schalter S1/S2 abhängigen HIGH-Pegel und legt Massepotential an den Fädelmagnet.

### 3. Wickeltachoimpulsverarbeitung

Die Optokoppler am linken (WT 1) und rechten (WT 2) Wickelteller geben pro Umdrehung des Wickels 8 Impulse ab. Diese werden durch die Schalttransistoren T 230 bzw. T 235 in Rechteckimpulse umgeformt und über die Pins 23 bzw. 32 dem IC 190 zugeführt. Dieser errechnet aus dem Verhältnis der beiden Frequenzen den augenblicklichen Bandstand und die Gesamtlänge der Cassette.

### 4. Bandanfang / Bandende

Zur Erkennung von Bandanfang und Band-

### 2.4 Loading Solenoid Control

The Loading Solenoid operates to engage the Loading Mechanics in the Drive Mechanism. For this T 240 receives a High level from IC 190-(6) depending upon the switch S1/S2, and the transistor provides a chassis potential connection for the Loading Solenoid.

### 3.Winding Tachopulse Processing

The Optocouples on the left (WT1) and right (WT2) winding carriers produce 8 pulses per revolution. These pulses are formed into rectangular signals by the switching transistors T 230 and T 235 which are applied to Pins 23 and 32 of IC 190. The IC calculates the instantaneous tape position and the total length of the cassette from e ratio of these two frequencies.

### 4. Beginning of Tape / End of Tape

To identify the Beginning of Tape and End of

### 2.4 Comando magnete di caricamento nastro

Questo magnete serve a bloccare il dispositivo di caricamento del nastro nella meccanica di movimento. Per questo T 240 riceve da IC 190-(6) un livello HIGH dipendente dalla pos. dell'interruttore S1/S2 e dà al magnete potenziale di massa.

### 3. Impulsi tachimetrici

Gli optoaccoppiatori che fanno capo ai piatti di avvolg. sinistro (WT 1) e destro (WT 2) forniscono 8 impulsi per ogni giro. Tali impulsi vengono trasformati in imp. rettangolari mediante i transistor commutatori T 230 risp. te T 235 ed attraverso i pin 23 e 32 inviati all'integrato IC 190. Dal rapporto delle frequenze avviene il rilevamento dell'esatta pos. del nastro e della sua lunghezza totale.

ende hat die VHS-Cassette an den beiden Bandenden eine Klarsichtfolie von ca. 13 bis 19 cm Länge. Über 2 Optokoppler wird Bandanfang und Bandende erkannt. Die Sendediode taucht dabei in der Cassettenmitte in ein Loch ein. Die Empfänger sind links und rechts außerhalb der Cassette angeordnet.
Die Phototransistoren "BA" (Bandanfang) oder "BE" (Bandende) schalten nach Masse, je nachdem, ob sie Bandanfang oder -ende erkennen. Die nachgeschalteten Transistoren T 260 (BA) und T 270 (BE) erhalten dadurch an den Basen folgende Pegel:

Tape, the VHS cassette has a clear foil, approx. 13-19 cm long, on each end of the tape. The beginning and end of tape is identified by two optocouples. The Transmitting diode is inserted into a hole in the middle of the cassette. The Receivers are located at the outside, left and right, of the cassette.
The Photo Transistors "BA" (Beginning of Tape) or "BE" (End of Tape) conduct to chassis when the Beginning or End of tape is identified. The transistors T 260 (BA) and T 270 (BE) which follow receive the following levels on the base:

### 4. Riconiscimento inizio/fine nastro

Per il riconoscimento dell'inizio e della fine del nastro, la cass. VHS possiede alle due estremità del nastro una pellicola trasparente la cui lunghezza varia da 13 a 19 cm. L'inizio e la fine del nastro vengono rilevati da due optoaccoppiatori. Il trasmettitore sporge in un foro a metà della cassetta ed i rilevatori sono sistemati a sinistra e a destra esternamente alla cassetta.
I fototransistor "BA" (inizio nastro) e "BE" (fino nastro) commutano verso massa a seconda se viene riconosciuto l'inizio o la fine del nastro. I transistor succesivi T 260 (BA) e T 270 (BE) ricevono alla base i seguenti livelli:

| | T 260 | T 270 | | |
|---|---|---|---|---|
| Normalzustand ( Band liegt vor den Fototransistoren) | HIGH (5V) | HIGH (5V) | Normal state tape is in front of the phototransistors) | Situazione normale (il nastro si trova prima dei fototransistor) |
| Bandanfang | LOW (4,3V) | HIGH (5V) | Beginning of tape | Inizio nastro |
| Bandende | HIGH (5V) | LOW (4,3V) | End of tape | Fine nastro |
| Bandriss | LOW (4,3V) | LOW (4,3V) | Tape torn | Rottura del nastro |

Dadurch ergeben sich an IC 190-(20) folgende Pegel:
Normalzustand ≈ 0 V
Bandanfang ≈ 1,4 V
Bandende ≈ 2,0 V
Bandriss ≈ 2,6 V

### 5. Bandservo

Der Capstanmotor ist ein Dreiphasenmotor, der mit Hallgeneratoren bestückt ist. Diese erzeugen Signale, die dem IC 320 (BA 6432) über die Pins 5...10 zugeführt werden. Abhängig von diesen Signalen erfolgt im IC 320 die Kommutierung der einzelnen Phasen des Capstanmotors.
Die Drehrichtungsumschaltung erfolgt über IC 320-(11). Dazu gibt der µC (IC 190) an den Pins 27 und 31 HIGH -/ LOW-Pegel aus, die über T 220 / T 221 und die Widerstandskombination R 220 / R 214 / R 223 / R 225 folgende Gleichspannungspegel an IC 320-(11) hervorrufen:

The IC 190-(20) therefore receives the following levels:
Normal State ≈ 0 V
Beginning of Tape ≈ 1.4 V
End of Tape ≈ 2.0 V
Tape Torn ≈ 2.6 V

### 5. Tape Servo

The Capstan Motor is three phase motor which is fitted with Hall Generators. These generate signals which are fed to IC 320 (BA 6432) on the Pins 5...10. Depending upon the signals the IC 320 carries out the commutation of the individual phases of the Capstan Motor. The control of direction of rotation is carried out by IC 320-(11). For this the µC (IC 190) provides a combination of HIGH-/LOW-levels on Pins 27 and 31 which are fed via T 220/T 221 and the resistor combination R 220/R 214/R 223/R 225 to produce the following DC voltage levels at IC 320-(11):

Pertanto, su IC 190-(20) si trovano i seguenti livelli:
situazione normale ≈ 0 V
inizio nastro ≈ 1,4 V
fine nastro ≈ 2,0 V
rottura del nastro ≈ 2,6 V

### 5. Regolazione servonastro

Il motore capstan è del tipo trifase provvisto di gen. di Hall. Essi producono segnali che vengono applicati ai pin 5...10 di IC 320 (BA 6432). In base a questi segnali nell'integrato ha luogo la commutaz. delle singole fasi del motore capstan. La commutaz. del senso di rotazione avviene per mezzo di IC 320-(11). A tale scopo il µC (IC 190) fornisce ai pin 27 e 31 livelli HIGH/LOW dai quali, mediante T 220/T 221 e le reti di resistenza R 220/R 214/R 223/R 225 vengono ricavati i sequenti livelli di tensione cont. in IC 320-(11):

| | IC 190-(27) | IC 190-(31) | IC 320-(11) | | |
|---|---|---|---|---|---|
| Drehrichtung vorwärts | HIGH | LOW | 0 ...1.3 V | Forward direction | Rotazione avanti |
| Motor steht | HIGH<br>LOW | HIGH<br>LOW | 1.5 ...3.5 V<br>1.5 ...3.5 V | Motor is stationary | Motore fermo |
| Drehrichtung rückwärts | LOW | HIGH | 3.5 ...5 V | Reverse direction | Rotazione indietro |

Für die Drehzahlregelung gibt das FG-Hallelement des Capstanmotors Impulse mit einer Frequenz von 757 Hz ab.
Diese werden im IC 155 verstärkt und dem programmierbaren Teiler IC 195 zugeführt. Dieser leitet die Tachoimpulse bei Wiedergabe unverändert, bei BSL >> / << durch 1 - 7 geteilt, an IC 190-(33) weiter. An IC190-(5), -(9), -(62) gibt der µC die das Teilerverhältnis bestimmenden Pegel aus. Die Tachoimpulse (Istwert) werden im IC 190 mit einem intern erzeugten Sollwert verglichen. Über IC 190-(34), -(35) gibt der µC eine impulsbreitenmodulierte Regelspannung aus. Diese wird über R 205/R 207/C 207 integriert und über den Regelverstärker IC 210 der CapstanEndstufe IC 320 über Pin 16 zugeführt.

### 6. Trackingregelung

Während der Aufnahme werden über den Synchronkopf 25 Hz-CTL-Impulse auf das Band aufgezeichnet, die bei Wiedergabe zur Spurnachführung benötigt werden.
Die 25 Hz-Impulse kommen bei Aufnahme von IC 190-(65) , werden invertiert (T 147), durch

For the control of speed the FG-Hall elements in the Capstan Motor produce pulses at a frequency of 757 Hz. The pulses are amplified in IC 155 and fed to the programmable divider IC 195. This provides on Playback, tachopulses in an unchanged form and divided by 1 - 7 on Picture Search >>/<<, to IC 190-(33). The µC feeds out on IC 190-(5), -(9), -(62) the level which corresponds to the dividing ratio. The tachopulses (Actual Value) are compared within the IC 190 with an internally generated Reference Value. From IC 190-(34), -(35) the µC produces a pulse width modulated control voltage. These are integrated by R 205/R 207/C 207 and fed via the control Amplifier IC 210 to the Capstan Output Stage IC 320 via Pin 16.

### 6. Tracking Control

During Recording a 25 Hz-CTL-Pulse is recorded on tape via the Sync Head. This pulse is required on Playback for Tracking Control.
The 25 Hz pulses are provided on Record from IC 190-(65), inverted (T 147), differentiated by C 145 and fed to the Sync Head via the Plug L1-B.

Per la regolaz. del no. di giri, il gen. di Hall FG del motore capstan fornisce impulsi con una frequenza di 757 Hz. In IC 155 gli impulsi vengono amplificati ed inviati al partitore programmabile, IC 205. Da qui essi giungono ad IC 190-(33) invariati in riprod., divisi per 1 - 7 durante la ric. immagine >>/<<. Ad IC 190-(5), -(9), -(62) il µC fornisce il livello che determina il rapporto di divisione. Gli imp. tachim. (valore reale) vengono confrontati nell'integ. IC 190 con un valore nom. generato internamente. Attraverso IC 190-(34), -(35) viene inviata dal µC una tensione di regolaz. che dipende larghezza dell'imp. risultante dal confronto. Tale tens. viene integrata mediante R 205/R 207/C 207 ed applicata attraverso l'amplif. di regolaz. IC 210 allo stadio finale del capstan IC 320 tramite il pin 16.

### 6. Regolazione tracking

Durante la registraz. vengono incisi sul nastro, per mezzo della testina di sincr., impulsi a frequenza di 25 Hz, che sono necessari in riproduzione per la ricerca della traccia. Gli impulsi a 25 Hz, in registraz., provengono da

C 145 differenziert und über den Stecker L1-B an den Synchronkopf gegeben.
Bei Wiedergabe werden die aufgesprochenen CTL-Impulse vom Synchronkopf abgetastet und im IC 155 vorverstärkt. Am Ausgang IC 155-(7) stehen positive und negative Impulse. Aus den positiven Anteilen dieser Impulsfolge, gewonnen über D 159, werden im nachfolgenden FlipFlop, T 170/177, Rechtecksignale geformt. Diese erhält der µC über IC 190-(36). Die negativen Anteile bestimmen über D 179 / T 180 das Tastverhältnis der Rechtecksignale. Damit ist die CTL-Spur auch zum Aufsprechen codierter Signale geeignet. Im µC wird bei Wiedergabe der Abstand der positiven CTL-Impulse zum Kopfumschaltimpuls HI mit einem vorgegebenen Sollwert verglichen und über den Phasenregelausgang IC 190-(34) nachgeregelt.
Werden die Tracking-Tasten betätigt, wird im µC der Sollwert entsprechend geändert. Die Phasenregelung hat die Aufgabe, die einmal eingestellte Tracking-Soll-Lage festzuhalten. Wird eine Cassette eingelegt und der Schacht ist abgesenkt, wird automatisch die Mittenstellung eingenommen.

### 7. Fehlererkennung

Tritt während des Betriebes eine Störung auf, so spricht eine Schutzschaltung an. Der Fehlercode F1 wird im Display blinkend angezeigt. Der Code hat folgende Bedeutung:
–Gerät erkennt Schacht- bzw. Fädelblockade

### 8. Einschalten von HiFi-Anlagen

Ist eine HiFi-Aufnahme programmiert, so steht während der Aufnahme über T110/T113 an Pin 10 der Universalbuchse eine Schaltspannung von ca. 10V/50mA. Diese ermöglicht es z.B. mit einer externen Schaltstufe eine HiFi-Anlage einzuschalten.

On Playback the CTL pulses recorded are picked up by the Sync Head and fed to the Preamplifier IC 155. At the output of IC 155-(7), positive and negative going pulses are present. The positive going pulses of this pulse sequence, obtained by D 159, are altered into rectangular signals by the following Flip-Flop T 170/177. These are received by the µC on IC 190-(36). The negative going pulses, obtained by Diode D 179/180, determine the mark-to-space Ratio of the rectangular signals. Therefore, the CTL track is also suitable for recording coded signals. In the µC, on Playback, the period between the positive going CTL pulses is compared with the Head Switchover Pulse HI and with a predetermined Reference Value and results in a control voltage at the Phase Control Output of IC 190-(34).
If the Tracking Buttons are depressed, the Reference Value is altered within the µC. The Phase Control has the task of holding the Tracking-Reference-Position once it has been set. When a cassette is inserted and the compartment lowered, the midvalue is automatically set.

### 7. Fault Identification

If a defect occurs during operation, a safety circuit responds. The Fault Code F1 flashes in the display. The Code has the following meaning:
- A malfunction has been identified in the cassette or loading drive.

### 8. Switching on of HiFi Installations

If a Hifi recording has been programmed, a switching voltage of approx. 10V/50mA is present during the record time on the universal socket on Pin 10 via T 110/T 113. This allows, for example, a HiFi Installation to be switched on via an external switching control stage.

IC 190-(65), vengono invertiti con T 147, differenziati per mezzo di C 145 ed applicati alla testina di sincr. attraverso L1-B. In riproduz., gli impulsi così registrati vengono rilevati dalla testina di sincronizz. ed amplificati in IC 155. Impulsi positivi e negativi sono presenti in uscita su IC 155-(7). Dalle parti positive di questa frequenza impulsiva ottenute con D 159 vengono formati dei segn. rettangolari nel flip-flop successivo, T 170/T 177. Essi vengono poi inviati al µC attraverso l'IC 190-(36). Le parti negative determinano il rapporto di cadenza di questi segnale con l'aiuto di D 179/T 180. In questo modo la traccia CTL può essere impiegata anche per la registraz. di segnali codificati. In riproduzione, la distanza degli imp. CTL positivi rispetto all'imp. di commutaz. testine HI viene confrontata con un valore nom. prestabilito e corretta mediante l'uscita regolaz. fase IC 190-(34).
Se vengono premuti i tasti di tracking, il valore nom. nel µC viene variato di conseguenza. La regolaz. di fase ha il compito di mantenere stabile la pos. nom. di tracking una volta che è stata regolata. Se viene inserita una cassetta ed il vano è stato abbassato, viene automaticamente presa come buona la posizione centrale.

### 7. Individuazione dei difetti

Se durante il funzion. è presente un difetto, interviene il circ. di protez. Il codice del difetto F1 appare lampegg. sul display. Il codice ha il seguente significato:
- l'apparecchio riconosce un blocco nel vano risp. te nel caricamento del nastro.

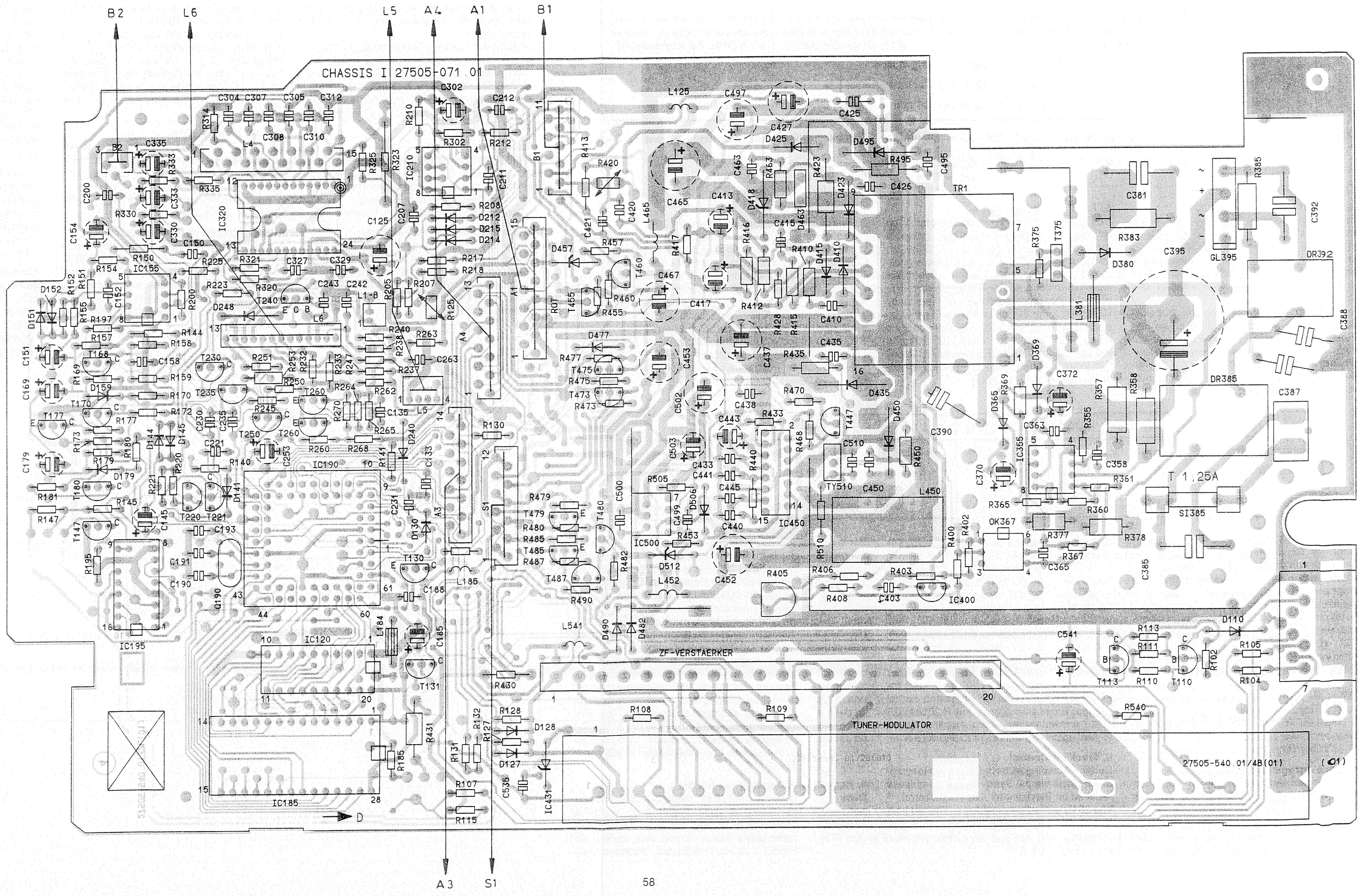
### 8. Accensione di impianti HiFi

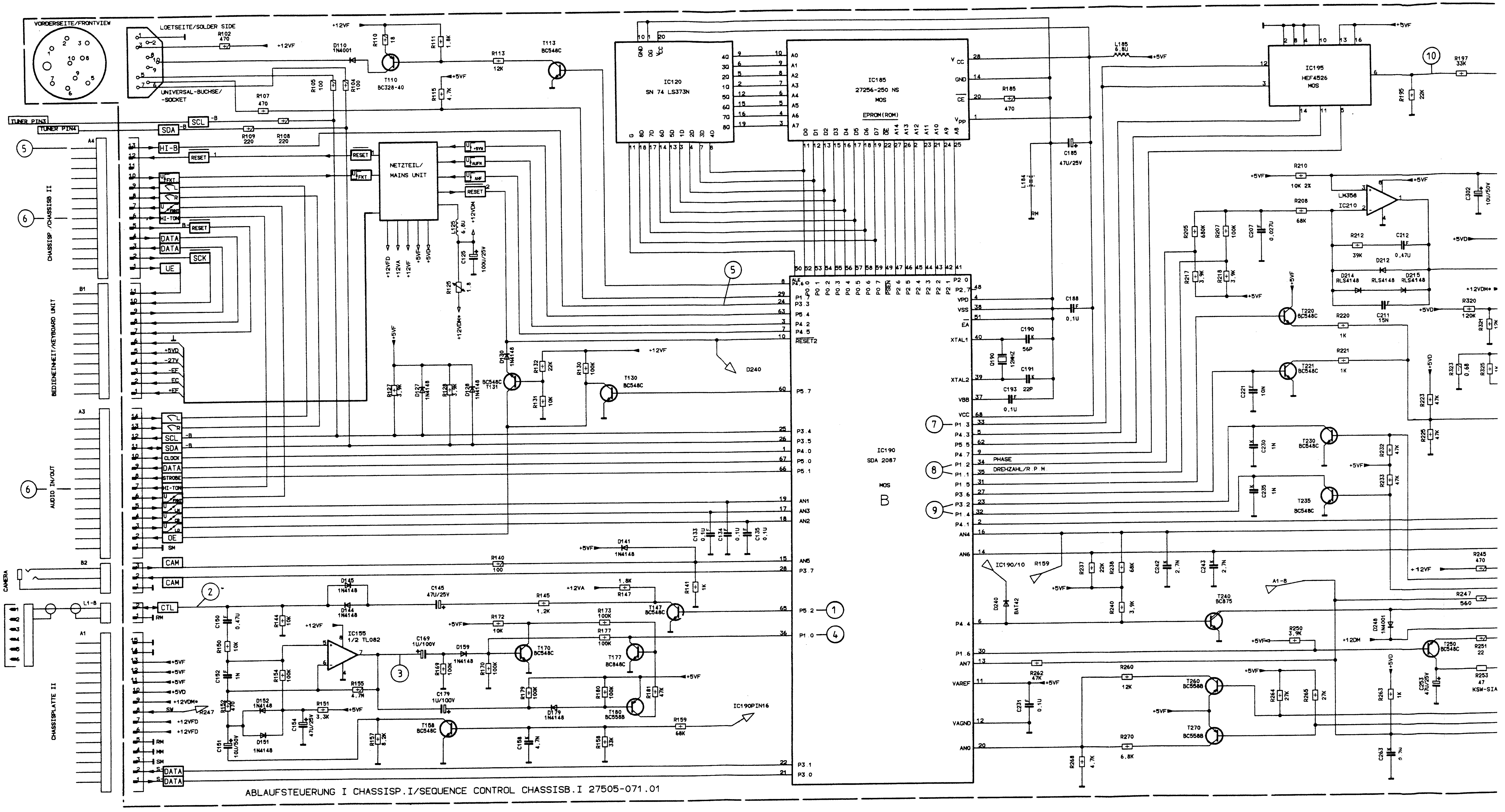
Se è programmata una registraz. HiFi, quando essa ha luogo giunge da T 110/T 113 al pin 10 della presa universale una tens. di commutaz. di ca. 10V / 50mA. Questa consente ad es. l'inserzione di un impianto HiFi con uno stadio di commutaz. esterno.

## Chassisplatte I / Chassis board I / Piastra telaio I

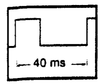
Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes

A 1 - Chassisplatte II / Chassis board II / Piastra telaio II
A 3 - Audio IN / OUT
A 4 - Chassisplatte II / Chassis board II / Piastra telaio II
B 1 - Bedieneinheit / Keyboard unit / Unità di comando
B 2 - Camera
L 5 - Laufwerk / Drive mechanism / Meccanica
L 6 - Laufwerk / Drive mechanism / Meccanica

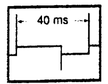

B2
L6
L5
A4
A1
B1
CHASSIS I 27505-071.01
ZF-VERSTAERKER
TUNER-MODULATOR
27505-540.01/4B(01)
T 1.25A
D
A3
S1


VORDERSEITE/FRONTVIEW
LOETSEITE/SOLDER SIDE
UNIVERSAL-BUCHSE/-SOCKET
TUNER PIN3
TUNER PIN4
CHASSISP./CHASSISB II
BEDIENEINHEIT/KEYBOARD UNIT
AUDIO IN/OUT
CAMERA
CHASSISPLATTE II
NETZTEIL/MAINS UNIT
IC120 SN 74 LS373N
IC185 27256-250 NS MOS EPROM(ROM)
IC195 HEF4526 MOS
IC190 SDA 2087 MOS B
IC210 LM358
IC155 1/2 TL082
IC190PIN16
IC190/10
T110 BC328-40
T113 BC548C
T130 BC548C
T131 BC548C
T147 BC548C
T158 BC548C
T170 BC548C
T177 BC848C
T180 BC558B
T220 BC548C
T221 BC548C
T230 BC548C
T235 BC548C
T240 BC875
T250 BC548C
T260 BC558B
T270 BC558B
D240 BAT42
L185 6.8U
PHASE
DREHZAHL/R P M
SCL
SDA
HI-B
RESET
DATA
SCK
UE
CAM
CTL
CLOCK
STROBE
HI-TON
OE
+12VF
+5VF
+5VD
+12VDM
+12VA
+12VFD
A1
A3
A4
B1
B2
L1-8
A1-8
D240

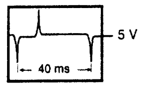
ABLAUFSTEUERUNG I CHASSISP.I/SEQUENCE CONTROL CHASSISB.I 27505-071.01



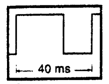
① Rec 0,75 $V_{SS}$



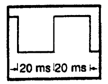
② Rec 10 $V_{SS}$



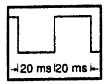
③ Pb ≥ 2,5 $V_{SS}$



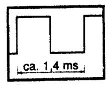
④ Pb 4 $V_{SS}$



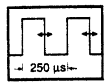
⑤ 5 $V_{SS}$



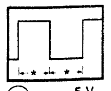
⑥ 5 $V_{SS}$



⑦ Pb (NP) 5 $V_{SS}$

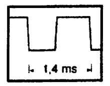


⑧ 4,5 $V_{SS}$

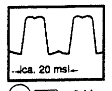


⑨ 5 $V_{SS}$
10 ms/cm

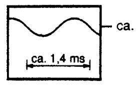
* abhängig von der Wickelteller- Drehzahl
dependent on the speed of the reel tables /
dependente dal numero di giri



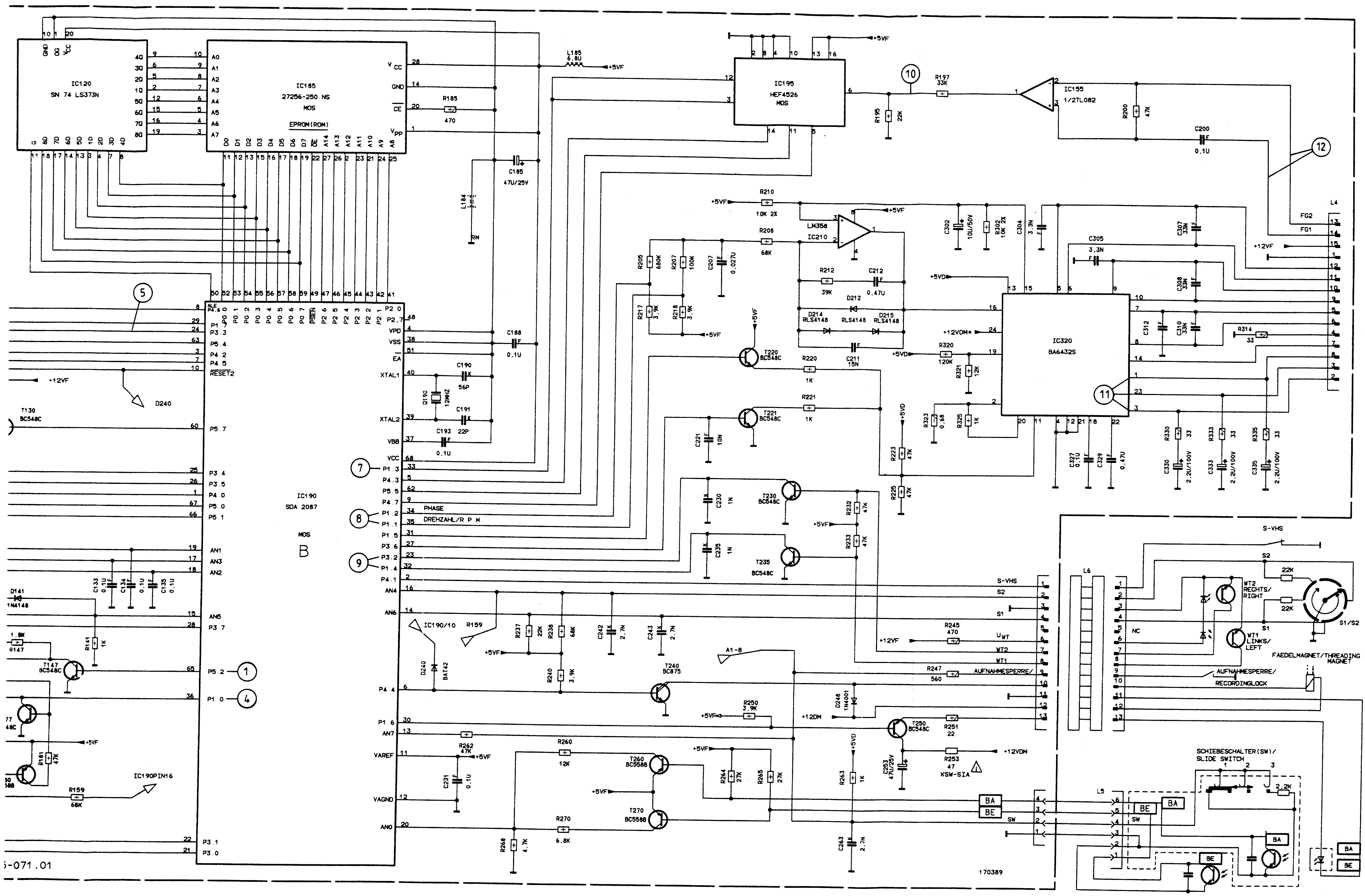
⑩ Pb (NP) 4 $V_{SS}$

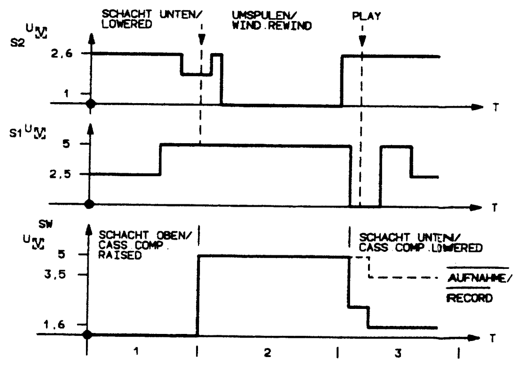


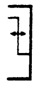
⑪ ▶▶ ◀◀ 8 $V_{SS}$

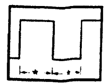


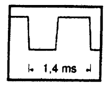
⑫ Pb (NP) ca. 40 m$V_{SS}$


⊥RM RECHNERMASSE/PROCESOR GROUND
⊥MM MOTORMASSE/-GROUND
⊥SM SIGNALMASSE/-GROUND
IC120 SN 74 LS373N
IC185 27256-250 NS MOS EPROM(ROM)
IC195 HEF4526 MOS
IC155 1/2TL082
IC190 SDA 2087 MOS B
IC210 LM358
IC320 BA6432S
CAPSTAN MOTOR
FG2 FG1 FG+ FG- H3- H3+ H1- H1+ H2- H2+ VH- VH+ M3 M1 M2
L185 6.8U
R185 470
C185 47U/25V
L184
R197 33K
R195 22K
R200 47K
C200 0.1U
R210 10K 2%
R208 68K
R205 680K
R207 100K
C207 0.027U
R217 3.9K
R218 3.9K
R212 39K
C212 0.47U
D212
D214 RLS4148
D215 RLS4148
C211 15N
T220 BC548C
T221 BC548C
R220 1K
R221 1K
C221 10N
R320 120K
R321 12K
R323 0.68
R326 1K
R223 47K
R225 47K
C302 10U/50V
R302 10K 2%
C304 3.3N
C305 3.3N
C307 33N
C308 33N
C310 33N
C312
R314 33
C327 0.1U
C329 0.47U
R330 33
R333 33
R335 33
C330 2.2U/100V
C333 2.2U/100V
C335 2.2U/100V
C188 0.1U
C190 56P
Q190 12MHZ
C191 22P
C193 22P 0.1U
ALE
RESET2
XTAL1
XTAL2
VBB
VPD
VSS
EA
PHASE
DREHZAHL/R.P.M
T130 BC548C
D240
D141 1N4148
R147 1.8K
T147 BC548C
R141 1K
C133 0.1U
C134 0.1U
C135 0.1U
R161 47K
R159 68K
IC190PIN16
IC190/10
BAT42
R237 22K
R238 68K
R240 3.9K
C242 2.7N
C243 2.7N
T230 BC548C
T235 BC548C
C230 1N
C235 1N
R232 47K
R233 47K
T240 BC875
A1-8
R250 3.9K
D248 1N4001
T250 BC548C
R251 22
R253 47
C253 47U/25V
KSW-SIA
R245 470
R247 560
R262 47K
C231 0.1U
R260 12K
R270 6.8K
T260 BC558B
T270 BC558B
R264 27K
R265 27K
R263 1K
C263 2.7N
R268 4.7K
VAREF
VAGND
AN0
S-VHS
S2
S1
UWT
WT2
WT1
AUFNAHMESPERRE/
RECORDINGLOCK
L6
NC
WT2 RECHTS/ RIGHT
WT1 LINKS/ LEFT
S1/S2
FAEDELMAGNET/THREADING MAGNET
SCHIEBESCHALTER(SW)/ SLIDE SWITCH
L5
BA
BE
SW
2.2K
+5VF
+5VD
+12VF
+12VDM
+12DM
170389
-071.01

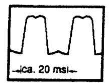




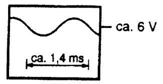

⑨ 5 $V_{SS}$ 10 ms/cm



⑩ Pb (NP) 4 $V_{SS}$



⑪ ▶▶ ◀◀ 8 $V_{SS}$



⑫ Pb (NP) ca. 40 m$V_{SS}$

* abhängig von der Wickelteller- Drehzahl
dependent on the speed of the reel tables /
dependente dal numero di giri

## Chassisplatte I - Ablaufsteuerung I
## Chassis board I - Sequence control I
## Piastra telaio I - Comando funzioni I

# (D) Chassisplatte II

## Funktionsgruppe: Ablaufsteuerung II

### Funktionsübersicht

Das Kernstück der Ablaufsteuerung II bildet der µC SDA 2087-A, der die Kopfservo-Regelung, sowie die Steuerung der Schrift-/Datengenerator-Funktionsgruppe, des Bildspeichers und des Bedienteiles übernimmt. Auch hier ist es erforderlich, die Kapazität der externen Programmspeicher zu erhöhen. Dazu benötigt man die Speicher-ICs IC 570, IC 580, IC 590 und das IC 555.

Der Datenverkehr zwischen den einzelnen Funktionsgruppen findet über 3 verschiedene Datenbus-Systeme statt.

a.) $I^2C$-Bus-A

Der $I^2C$-Bus-A ist ein bidirektionaler Zweileiterbus, bestehend aus der SDA (System-Daten)-Leitung, CIC 600-(26) und der SCL (System-Clock)-Leitung, CIC 600-(25). Beide liegen über die Widerstände CR 560 und CR 561 an $+5V_D$. Der Datenverkehr wird vom CIC 600, der auch den Systemtakt SCL erzeugt, gesteuert. Über den $I^2C$-Bus-A sind die Schrift-/Datengenerator-Funktionsgruppe, der Bildspeicher, IC 590 (Uhr-RAM), IC 580 (E-EPROM) und IC 650 (VPS) mit dem Ablaufrechner A verbunden.

b.) Serielle Schnittstelle für das Bedienteil.

Für den Datenverkehr mit dem Bedienrechner µPD 75212 (IC 3410) sind folgende 5 Leitungen notwendig:

| | |
|---|---|
| - DATA IN | CIC 600 - (61) |
| - DATA OUT | CIC 600 - (66) |
| - $\overline{\text{SCK}}$ (Clock) | CIC 600 - (62) |
| - UE | CIC 600 - (9) |
| - B-RESET | CIC 600 - (67) |

c.) Serielle Schnittstelle zur Ablaufsteuerung I.

Für den Datenverkehr mit der Ablaufrechner B, IC 190 auf der Chassisplatte I, wird die serielle Schnittstelle CIC 600-(21), -(22) verwendet.

**Die Ablaufsteuerung ist in folgende Funktionsgruppen unterteilt:**

1. Netzteilansteuerung
2. Kopfservoregelung
3. Steuerung der Schrift-/Datengenerator-Funktionsgruppe (DOS)

### 1. Netzteilansteuerung

Nach dem Anstecken des Recorders ans Netz, erhält der µC an CIC 600-(10) den $\overline{\text{Reset 1}}$-Impuls. Daraufhin gibt er an Pin 63 den Befehl U↑FKT aus, der die Funktionsspannungen im Netzteil aktiviert. An CIC 600-(67) gibt der Ablaufrechner A den B-$\overline{\text{Reset}}$-Impuls aus, der über Kontakt A4-9 dem Bedienrechner zugeführt wird. Mit dem Einschalten der Funktionsspannungen erzeugt das Netzteil den $\overline{\text{Reset}}$-B für den Ablaufrechner B auf der Chassisplatte I. Der weitere Ablauf ist in der Beschreibung Ablaufsteuerung I, Reset / Netzteilansteuerung enthalten. Um das Gerät im Standby-Betrieb (Chassisplatte I abgeschaltet) durch das Einschieben einer Cassette aktivieren zu können, erhält Pin 13 des Ablaufrechners A über Kontakt A1-8 und den Cassettenschachtschalter SW Massepotential, schaltet über Pin 63 die Funktionsspannungen und somit die Ablaufsteuerung I ein.

### 2. Kopfservo

Die Kopfservoregelung sorgt für die richtige Drehzahl und Phase des Kopfradantriebs. Die Regelung erfolgt dabei im Ablaufrechner A (CIC 600). Die Istwerte für die Regelung (FG- und PG- Impulse) weden im IC 2901 (AN 3814 K) auf der Motorsteuerplatte aus den Hallgenerator-Informationen und den Phasenspannungen des Motors gewonnen. Sie stehen an Kontakt P 2902-2 / L3-2 zur Verfügung. In den nachfolgenden Transistorstufen T 625 und T 630 werden die PG-Impulse (25 Hz) und FG-Impulse (150 Hz) für die weitere Verarbeitung im Ablaufrechner A getrennt und diesem über die Pins 23 (FG) und 32 (PG) zugeführt. Den für die Phasenbeziehung bei Aufnahme erforderlichen Bildimpuls erhält der Ablaufrechner A über Pin 36. An CIC 600-(34), -(35) stehen der Phasenlage und der Drehzahl entsprechende impulsbreitenmodulierte Rechteckspannungen, die, über CR609/CR610/CC610 addiert und integriert, dem Regelverstärker IC 620 zugeführt werden. Von IC 620-(1) gelangt die Regelspannung über L3-3 / P 2902-3 zum Motorsteuer-IC2901-(7). Bei Wiedergabe wird für die Phasenregelung anstatt des Bildimpulses ein im Ablaufrechner A erzeugtes Referenzsignal verwendet.

### 3. Steuerung der Schrift-/Datengenerator-Funktionsgruppe (DOS)

Die Steuerung der Schrift-/Datengenerator-Funktionsgruppe (DOS) erfolgt über den $I^2C$-Bus-A, CIC 600-(25), -(26).

## Funktionsgruppe: Schrift-/Daten-Generator (DOS)

### Funktionsübersicht :

Die Funktionsgruppe Schrift-/Daten-Generator enthält einen Testbild-/Datengenerator, die Videotext-/VPS-Verarbeitung, die Uhrzeit- und Datumgenerierung. Dazu benötigt er folgende Baugruppen (IC´s):

- IC 690, Daten-Slicer, zur Aufbereitung der empfangenen Sendersignale
- IC 725, ECCT ( European Computer Controlled Teletext), zur Steuerung der Abläufe im Schrift-/Daten-Generator und zum Erzeugen der Zeichendaten
- IC 730, Seitenspeicher, zum Abspeichern der von IC 725 erzeugten Daten.
- IC 630 zur VPS-Verarbeitung
- IC 590 zur Uhrtakterzeugung

Die Spannungsversorgung erfolgt durch die Funktionsspannungen $+ 5V_F$ und $+12V_F$.

### 1. Daten-Slicer (IC 690)

Der Daten-Slicer übernimmt im Einzelnen folgende Aufgaben:

- Abtrennen der empfangenen Videotext-Daten.
- Erzeugen des Datentaktes (6,9375 MHz).
- Erzeugen des 6 MHz-Taktes für IC 725 (interne Bilderzeugung, ECCT).
- Phasenstarre Verkopplung des 6 MHz-Oszillators mit dem Sendersynchronsignal.

### 2. ECCT und Seitenspeicher (IC 725 / 730)

Der ECCT beteht aus folgenden Funktionseinheiten:

- Datenakquisition
- Ablaufsteuerung
- Speicherschnittstelle
- Zeichengenerator
- $I^2C$-Bus-Steuerung

a) Datenakquisition

Im IC 725 werden die, an Pin 6 anstehenden Teletext-Daten (TTD) auf Parity-Fehler untersucht. Anschließend liest man die Daten in den Seitenspeicher IC 730 ein.

b) Ablaufsteuerung

Aus dem an IC 725-(9) anstehenden 6 MHz-Takt werden alle IC-internen Taktfrequenzen abgeleitet. Zur Phasensynchronisation erzeugt man den Sandcastle-Impuls, der über IC 725-(11) dem Daten-Slicer (IC 690) zugeführt wird. Des weiteren generiert man im IC 725 das Synchronsignal (SYN), das dem Chromabaustein über IC 755 und S3-6 zugeführt wird.

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# (GB) Chassis Panel II

## Function group: Sequence Control II

### Functional Overview

The heart of the Sequence Control II is formed by the µC SDA 2987-A which takes control of the Character/Data Generator-Function Group, the Field Store and the Keyboard Stage. It is also necessary to increase the capacity of the external Programme Memory. For this the Memory-ICs IC 570, IC 580, IC 590 and the IC 555 are required. The Data traffic between the individual function groups is carried via three different Data Bus Systems.

a.) $I^2C$ Bus-A

The $I^2C$ Bus-A is a bi-directional two lead Bus, consisting of the SDA (system data)-lead, CIC 600-(26) and the SCL (System-Clock)-lead, CIC 600-(25). Both leads are connected to $+5V_D$ via resistors CR 560 and CR 561. The data traffic is controlled from CIC 600 which also generates the System Clock SCL. The $I^2C$ Bus-A connects the Character/Data Generator Function Group, the Field Store, IC 590 (Cock-RAM), IC 580 (E-EPROM) and IC 650 (VPS) with the Sequence Computer A.

b.) Serial Interface for the Control Stage

For the Data traffic with the control computer µPD 75212 (IC 3410) the following five leads are required:

| | |
|---|---|
| - DATA IN | CIC 600 - (61) |
| - DATA OUT | CIC 600 - (66) |
| - $\overline{\text{SCK}}$ (Clock) | CIC 600 - (62) |
| - UE | CIC 600 - (9) |
| - B-RESET | CIC 600 - (67) |

c.) Serial Interface to the Sequence Control I

A Serial Interface CIC 600-(21), -(22) is used for the Data traffic with the Sequence Computer B, IC 190 on the Chassis Panel I.

**The Sequence Control is divided into the following Function Groups:**

1. Mains Stage Control
2. Head Servo Control
3. Controlling the Character/Data Generator-Function Group (DOS).

### 1. Mains Stage Control

After plugging the Recorder into the Mains, the µC receives on CIC 600-(10) the reset pulse $\overline{\text{RESET 1}}$. Thereafter the µC produces on Pin 63 the command U↑FKT which activates the Function Voltage supplies in the Mains Stage. From CIC 600-(67) the Sequence Computer A feeds out the $\overline{\text{B-RESET}}$ pulse which is fed to the Keyboard Computer via contact A4-9. With the switching on of the Function Voltages the Mains Stage generates the $\overline{\text{Reset-B}}$ pulse for the Sequence Computer B on the Chassis Panel I. The other sequences are given in the description for the Sequence Control I, Reset/Mains Stage Control. So that the recorder can be activated on Stand-by Mode (Chassis Panel I switch off), when a cassette is inserted, the Sequence Computer A receives a chassis potential on Pin 13 from contact A 1-8 and the casssette switch SW. The Sequence Computer A, CIC 600, switches the Function supplies on via Pin 63 and also switches on the Sequence Control I.

### 2. Head Servo

The Head Servo Control maintains the correct speed and phase of the Head Wheel Drive. The control is carried out in the Sequence Computer A (CIC 600). The Actual Value for the control (FG- and PG-pulses) is generated by the IC 2910 (AN 3814 K) on the Motor Drive Panel from the Hall Generator information and the Phase voltages of motor. These are present on contact P 2902-2/L 3-2 for processing. In the following transistor stages, T 625 and T 630 the PG pulses (25 Hz) and the FG pulses (150 Hz) are separated and fed to the Sequence Computer A for further processing. These are fed in on Pins 23 (FG) and 32 (PG). For the Phase calculation on Record, the Field pulse required is received by the Sequence Computer A on Pin 36. On CIC 600-(34), -(35) the Phase and Speed Control voltages are present as a pulse width modulated rectangular wave voltage form which are added by CR 609/CR 610/CC 610 and integrated and then fed to the control amplifier IC 620. From IC 620-(1) the drive voltage is fed via L3-3/P 2902-3 to the Motor Drive IC 2901-(7). On Playback, instead of the Field Pulse used for Phase Control, the Sequence Computer A generates a Reference Signal internally.

### 3. Controlling the Character-/Data Generator Function Group (DOS)

The Control of the Character-/Data Generator-Function Group (DOS) is carried out via the $I^2C$ Bus-A, CIC 600-(25), -(26).

## Function Group: Character / Data Generator (DOS)

### Functional Overview

The Character/Data-Generator function group consists of a Test Picture Data Generator, the Teletex-/VPS-Processing, the Clock Time and Data Generation. For this the following components (ICs) are required:

- IC 690, Data Slicer, for processing the transmitter signals received.
- IC 725, ECCT (European Computer Controlled Teletext), for controlling the sequence in the Character/Data Generator and for generating the Character Data.
- IC 730, Page Memory, to store the Data generated by IC 725.
- IC 630, for VPS Processing.
- IC 590, for generating the Real Time Clock.

The supply voltage is taken from the function voltages $+5V_F$ and $+12V_F$.

### 1. Data-Slicer (IC 690)

The Data Slicer carries out the following individual tasks:

- Separating the Teletext Data received.
- Generating the Data Clock (6.9375 MHz).
- Generating the 6 MHz-Clock for IC 725 (internal field generation, ECCT).
- Phase locked coupling of the 6 MHz Oscillator to the transmitter synchronising signal.

### 2. ECCT and Page Memory (IC 725 / IC 730)

The ECCT consists of the following functional units:

- Data Acquisition
- Sequence Control
- Memory Interface
- Character Generator
- $I^2C$ Bus Control

a) Data Acquisition

In IC 725, the Teletext Data (TTD) present on Pin 6 is checked for Parity errors. Subsequently, the Data is read into the Page Memory IC 730.

b) Sequence Control

From the 6 MHz Clock present on IC 725-(9) all the internal IC Clock frequencies are generated. For phase synchronisation, the Sandcastle-Pulse is generated, is fed via IC 725-(11) to the Data Slicer (IC 690). In addition the IC 725 generates the Synchronising signal, which is fed to the Chroma Module via IC 755 and S3-6.

c) Memory Interface

The Data transfer to the Page Memory (IC

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# (I) Piastra telaio II

## Gruppo funzioni: Comando funzioni II

### Prospetto delle funzioni

Il cuore del comando funzioni II è costituito dal µC SDA 2987-A, che provvede alla regolazione del servotestine ed al comando delle funzioni del generatore caratteri-dati, della memoria d'immagine e della sezione comandi. Anche per tale motivo è necessario aumentare la capacitá della memoria di programma esterna. Per questo vengono utilizzate le memorie IC570, IC 580, IC 590 e IC 555. Lo scambio dei dati tra i singoli gruppi di funzioni ha luogo attraverso 3 differenti sistemi di bus dati.

a) Bus $I^2C$ - A

Il bus $I^2C$ è un bus bidirezionale a due linee che è formato dalla linea dati SDA, CIC 600-(26), e dalla linea clock SCL, CIC 600-(25). Entrambe questo linee sono collagate a $+5V_D$ attraverso le resistenze CR560 e CR 561. Lo scambio dei dati viene comandato da CIC 600 che produce anche il sistema clock SCL. Tramite il bus $I^2C$ A, anche lo unità generatore caratteri-dati, memoria d'immagine, IC 590 (RAM-orologio), IC 580 (E-EPROM) e IC 650 (VPS) sono collegate al µC di comando A.

b) Interfaccia seriale per il modulo comandi e l'unità comando funzioni B.

Per lo scambio dei dati con il µC µPD 75212 (IC 3410) del modulo comandi sono necessarie le seguenti 5 linee:

| | |
|---|---|
| - DATA IN | CIC 600 - (61) |
| - DATA OUT | CIC 600 - (66) |
| - $\overline{\text{SCK}}$ (CLOCK) | CIC 600 - (62) |
| - UE | CIC 600 - (9) |
| - B-RESET | CIC 600 - (67) |

c) Interfaccia seriale per il comando funzioni I

Per lo scambio dei dati con il µC del comando funzioni B, IC 190 sulla piastra telaio I, viene impiegata un'interfaccia seriale CIC 600-(21), -(22).

**Il comando funzioni è suddiviso nei seguenti gruppi di funzioni:**

1. Comando alimentatore
2. Regolazione servotestine
3. Comando delle funzioni del generatore caratteri-dati (DOS)

### 1. Comando alimentatore

Dopo il collegamento del videoregistratore alla rete, il µC riceve un impulso $\overline{\text{reset 1}}$ al CIC 600-(10) e dà al pin 63 l'ordine U↑FKT che nell'alimentatore attiva le tensioni di funzionamento. Al pin 67 (CIC 600), il µC di comando A emette l'impulso $\overline{\text{reset B}}$, il quale viene condotto al µC del modulo comandi attraverso il contatto A 4-9. Con l'abilitazione delle tensioni di funzionamento, l'alimentatore produce il $\overline{\text{reset B}}$ per il µC di comando B sul telaio I. Le fasi successive sono descritte nel capitolo - Reset/comando alimentatore - del comando funzioni I. Per attivare l'apparecchio in posizione standby (piastra telaio I esclusa) tramite l'inserimento di una cassetta, il Pin 13 del µC di comando A riceve potenziale di massa attraverso il contatto A 1-8 e l'interruttore vano cassetta SW e, mediante il pin 63, attiva le tensioni di funzionamento e quindi il comando funzioni I.

### 2. Servotestine

La regol. del servotestine serve a garantire il corretto no. di giri e la fase del comando ruota testine. La regolazione avviene nel µC A (CIC 600). I valori reali (imp. gener. frequenza FG e fase PG) vengono prelevati in IC 2901 (AN 3814 K) sulla piastra comando motore dalle informazione del generatore di Hall e dalle tensioni di fase del motore. Essi sono disponibili ai contatti P2902-2/L 3-2. Nei successivi stadi transistor T 625 e T 630 gli impulsi PG di 25 Hz e FG di 150 Hz vengono separati per l'ulteriore elaborazione nel µC di comando A ed ivi condotti attraverso i pin 23 (FG) e 32 (PG). L'impulso di quadro necessario come riferimento di fase in registrazione viene ottenuto dal µC di comando A tramite il pin 36. Al CIC 600-(34), -(35) si trovano le tensioni rettangolari modulate in larghezza corrispondenti alla posizione di fase ed al no. di giri. Esse vengono combinate ed integrate mediante CT 609/ CR 610/ CC 610, quindi giungono all'amplificatore di regolazione IC 620. Da IC 620-(1) la tensione di regolazione arriva all'integ. com. motore 2901-(7) per mezzo di L3-3/P 2902-3. In riproduzione, per la regolazione di fase, al posto dell'impulso di quadro viene impiegato un segnale di riferimento prodotto nel µC di comando A.

### 3. Comando delle funzioni del generatore caratteri-dati (DOS)

Ciò avviene grazie al bus $I^2C$-A, CIC 600-(25), -(26).

## Gruppo funzioni: Generatore caratteri dati (DOS)

### Prospetto delle funzioni

Il generatore caratteri / dati (DOS) comprende un generatore monoscopio / dati, la sezione per l´elaborazione dei segnali televideo e VPS ed il circuito di generazione dell´ora e della data. Per questo sono necessari i seguenti componenti (IC):

- IC 690, data slicer, per l´elaborazione dei segnali televisivi in arrivo;
- IC 725, ECCT (European Computer Controlled Teletext), per comandare le sequenze di lavoro nel generatore caratteri / dati e per produrre i caratteri;
- IC 730, memoria di pagina, perla memorizzazione dei dati prodotti in IC 725;
- IC 630 per l´elaborazione dei segnali VPS;
- IC 590 per generare la cadenza dell´orologio.

L´alimentazione è fornita dalle tensioni $+5\ V_F$ e $+12\ V_F$.

### 1. Data Slicer (IC 690)

Questo integrato svolge i seguenti compiti:

- separazione dei dati televideo ricevuti
- generazione della cadenza dati (6,9375 MHz)
- generazione della cadenza a 6 MHz per IC 725 (formazione interna dell´immagine, ECCT)
- accoppiamento in fase rigida dell´oscillatore accordato a 6 MHz col segnale di sincronismo trasmesso.

### 2. ECCT e memoria di pagina (IC 725/730)

L´integrato ECCT è costituito dai seguenti gruppi di funzioni:

- acquisizione dati
- comando funzioni
- interfaccia della memoria
- generatore di caratteri
- comando $I^2C$-bus

a) Acquisizione dati

In IC 725, i dati televideo (TTD) applicati al pin 6 vengono esaminati allo scopo di individuare errori di parità e successivamente immessi nella memoria di pagina IC 730.

b) Comando funzioni

Tutte le frequenze di cadenza che riguardano l´IC derivano dalla cadenza a 6 MHz presente su IC 725-(9). Per la sincronizzazione di fase viene generato un impulso sandcastle che viene inviato al data slicer (IC 690) mediante IC 725-(11). In IC 725 si produce

c) Speicherschnittstelle
Der Datentransfer zum Seitenspeicher (IC 730) erfolgt über die 8 Datenleitungen, IC 725-(22)...-(29) und die 13 Adressleitungen IC 725-(2), -(3), -(30)...-(40). Die Steuerung der Schreib- und Lesevorgänge wird über IC 725-(4) und IC 725-(5) durchgeführt.

d) Zeichengenerator
Der Zeichensatz des IC 725 umfaßt 128 alphanumerische und 2x64 Grafik-Zeichen in Form einer Rasterpunktmatrix aus 12 horizontalen und 10 vertikalen Punkten. Der Zeichengenerator erzeugt die R-/G-/B-Signale, die man über IC 725-(13), -(14), -(15) auskoppelt und im IC 760 zur weiteren Verarbeitung im Chromateil durchschaltet. Über IC 725-(17) verwendet man das Blank-Signal zur Umschaltung "Text-RGB" und "Bildspeicher-RGB".

e) I$^2$C-Bus-Steuerung
Die Daten, Parameter und Tafeln für das TEXT-PROGRAMMING sind im EPROM (IC 570) abgelegt. Die Übertragung zum IC 725 erfolgt über den I$^2$C-Bus durch den Hauptrechner A (CIC 600).

### 3. VPS-Verarbeitung

Der IC 650 erhält über Pin 2 das FBAS-Signal. Im internen Daten-Slicer wertet er die VPS-Daten aus, entschlüsselt sie im integrierten Decoder und überträgt sie über den I$^2$C-Bus zum Ablaufrechner A (CIC 600).

### 4. Uhrtakterzeugung / RAM

Das IC 590 erzeugt mit dem 32,783 KHz-Quarz (Q 590) den Uhrtakt. Aus diesem wird im IC 590 die Uhrzeit und das Datum generiert und über den I$^2$C-A-Bus dem Ablaufrechner A mitgeteilt. Das ebenfalls im IC 590 befindliche RAM (2 kBit) wird zur Speicherung von Kanalbelegungen und Timerplätzen benutzt.

730), is accomplished via 8 Data leads, IC 725-(22)...-(29) and the 13 address leads IC 725-(2), -(3), -(30)...-(40). The control of the Writing and Reading Process is carried out by IC 725-(4) and IC 725-(5).

d) Character Generator
The character set contained in IC 725 includes 128 alphanumeric and 2x64 graphic characters in the form of a raster dot matrix consisting of 12 horizontal and 10 vertical dots. The character generator produces the R-/G-/B-signals which are taken from IC 725-(13), –(14), -(15), switched through IC 760 for further processing in the Chroma Stage. From IC 725-(17) the Blanking signal is used to switch between "Text-RGB" and "Field Store-RGB".

e) I$^2$C Bus-Control
The Data, Parameter and Tables for the Text Programming are contained in the EPROM (IC 570). The transfer to IC 725 is by the I$^2$C Bus controlled by the Sequence Control Computer A (CIC 600).

### 3. VPS-Processing

The IC 650 receives the CCVS Signal via Pin 2. In an internal Data Slicer, the VPS Data is separated, the Data is descrambled in the integrated decoder and transferred on the I$^2$C Bus to the Sequence Control Computer A (CIC 600).

### 4. Real Time Clock Generation / RAM

The IC 590 generates the real time clock from the frequency generated by the 32.783 kHz Quartz (Q 590). From this the IC 590 generates the clock time and the date and advises the Sequence Control Computer A via the I$^2$C-A Bus. In the same way, the RAM (2 kBit) in the IC 590 is used for memorising the channel allocation and the timer locations.

anche il segnale di sincronismo (SYN) che poi giunge al modulo croma passando per IC 755 e S3-6.

c) Interfaccia della memoria
Il trasferimento dei dati alla memoria di pagina (IC 730) avviene per mezzo di 8 linee dati, IC 725-(22)... -(29), e di 13 linee di indirizzo, IC 725-(2), -(3), -(30)...-(40). Il comando delle fasi di scrittura e di lettura viene effettuato tramite IC 725-(4) e -(5).

d) Generatore di caratteri
L'insieme dei caratteri in IC 725 comprende 128 segni alfanumerici e 2x64 segni grafici sotto forma di una matrice costituita da 12 punti orizzontali e 10 verticali.
Il generatore di caratteri produce i segnali R-G-B che preleva da IC 725-(13), -(14), -(15) ed invia ad IC 760 per l'ulteriore elaborazione nel module croma. Il segnale "Blank" viene fornito da IC 725-(17) ed utilizzato per la commutazione "Text-RGB" e "memoria d'immagine-RGB".

e) Comandi I$^2$C-Bus
Dati, parametri e tabelle per il Text-Programming sono contenuti nella EPROM (IC 570). Il trasferimento ad IC 725 è ad opera del calcolatore principale A (CIC 600) attraverso il bus I$^2$C.

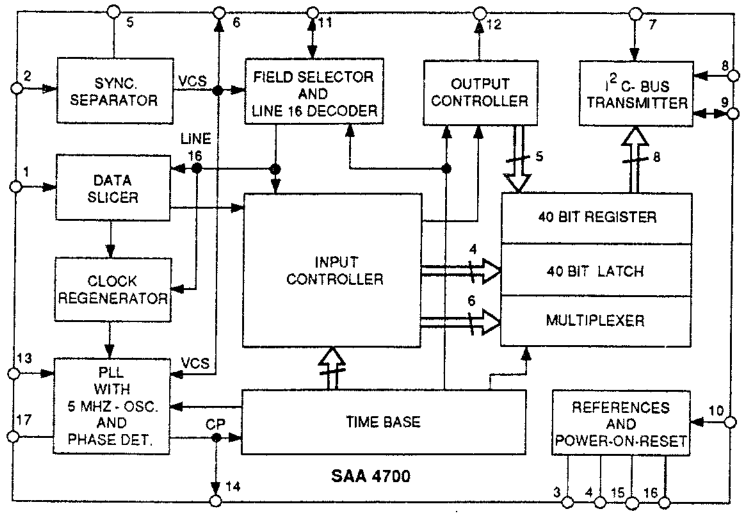
### 3. Elaborazione dei segnali VPS

L'IC 650 riceve il segnale FBAS dal pin 2. Nel Data-Slicer interno esso valuta i dati VPS, che decodifica nel decoder integrato e trasmette al µC del comando funzioni A (CIC 600) per mezzo del bus I$^2$C.

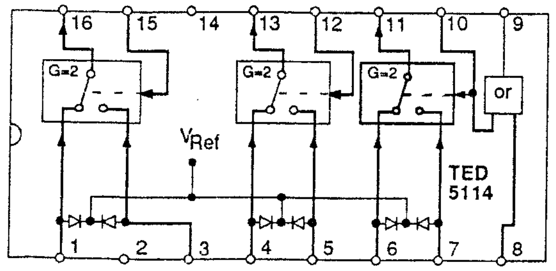
### 4. Generazione della cadenza dell'orologio

Questa cadenza è generata in IC 590 con l'aiuto di un quarzo (Q 590) a 32,783 kHz. Da essa vengono prodotte le informazioni ora e data condotte poi al µC A (CIC 600) attraverso il bus I$^2$C. La RAM (2 kBit) pure presente nell'IC 590 viene impiegata per la memorizzazione dei canali e delle posizioni Timer.

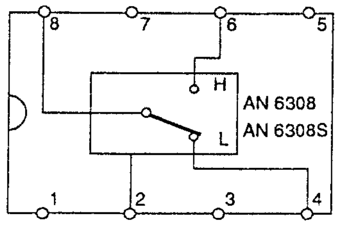
**SAA 4700**



**TEA 5114**



**AN 6308**



## D Abgleich

**Meßgeräte :**
Oszilloskop mit Tastkopf 10 : 1, Frequenzzähler
**Servicearbeiten nach Austausch**
- **der Chassisplatte II, des IC 580:**
  Abgleich Nr. 1, 2;
  Standard-Ton – Abgleich Nr. 4
- **von IC 590, C 590, Q 590:** Abgleich Nr. 3

## GB Adjustment

**Test equipment:**
Oscilloscope with 10 : 1 probe, frequency counter
**Servicing work after replacing**
- **the Chassis board II, the IC 580:**
  Adjustment No. 1, 2;
  Standard Sound – Adjustment No. 4
- **the IC 590, C 590, Q 590:** Adjustment No. 3

## I Taratura

**Strumenti :**
Oscilloscopio con sonda 10 : 1, Frequenzimetro
**Lavori da eseguire dopo la sostituzione di**
- **piastra telaio II, IC 580:**
  taratura no. 1, 2;
  Audio standard – taratura no. 4
- **IC 590, C 590, Q 590:** taratura no. 3

| D Abgleich | Vorbereitung | Betriebsart | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. RAM und EEPROM vorladen | – Mit dem Fernbediengeber die Zahlenfolge " 4934" eingeben, Taste "OK" drücken (im Display erscheint "0") und anschließend Taste II. Bei erfolgreich durchgeführtem Abgleich erscheint ":" blinkend im Display. | | | |
| 2. Kopfrad - Lagengeber | – Testcassette einlegen.<br>– Mit dem Fernbediengeber die Zahlenfolge " 4934" eingeben, Taste "OK" drücken (im Display erscheint "0") und anschließend Taste "6". Im Display erscheint während des automatischen Kopfrad-Lagengeberabgleichs die Anzeige "A6". Bei erfolgreich durchgeführtem Abgleich erscheint "0" im Display.<br>– Löschen der Funktion: Taste ⏏ der Bedieneinheit drücken. | | | |
| 3. Uhr | IC 590-(7) über einen 10 kΩ-Widerstand an +5V$_D$ legen.<br>Frequenzzähler: IC 590-(7) | Standby | C 590 | Mit C 590 Taktfrequenz auf 1 s ± 4µs einstellen. 10 kΩ-Widerstand entfernen. |
| 4. Höhenanhebung | | Videotext-Betrieb: Seite 199 wiederholt aufrufen, da nur so die Seite neu eingelesen wird und eine Beurteilung der Fehlerschwelle möglich ist. | R 746 (HA) | Der Einsteller R 746 steht bei Auslieferung auf Linksanschlag (kleinste Höhenanhebung ca. 2dB). Treten trotz einwandfreiem Antennensignal Zeichenfehler auf, R 746 soweit vom Anschlag wegdrehen bis die Fehler verschwinden. Nicht weiterdrehen, da die Fehlerhäufigkeit wieder zunehmen kann. |

| GB Adjustment | Preparation | Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. RAM and EEPROM pre-charging | – With the remote control transmitter feed in the number sequence "4934", depress button "OK" ( "0" is indicated in the Display) and thereafter button II. If the adjustment is successful ":" appears flashing in the display. | | | |
| 2..Headwheel Position pulse | – Use a Test cassette.<br>– With the remote control transmitter feed in the number sequence "4934", depress button "OK" ( "0" is indicated in the Display) and thereafter button "6". The headwheel position sensor adjustment is now automatically carried out. In the display during the alignment the indicator will show "A6". If the adjustment is successful "0" appears in the display.<br>– To cancel this function: Depress the ⏏ button on the Keyboard Unit. | | | |
| 3. Clock | Connect IC 590-(7) to +5V$_D$ via a 10 kΩ resistor.<br>Frequency counter: IC 590-(7) | Standby | C 590 | Set clock frequency to 1s ± 4 µs via C 590. Remove the 10 kΩ resistor. |
| 4. High-frequency emphasis | | Videotext operation: Select page 199 repeatedly so that the page is read in again thus allowing to determine the margin of error. | R 746 (HA) | On delivery the preset R 746is set to its extreme left position (minimum high-frequency emphasis approx. 2 dB). If faults in the characters occur although the aerial signal is correct turn R 746 clockwise until the faults disappear. Stop turning at this position because the error rate may increase again. |

| I Taratura | Preparazione | Funzionamento | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Ricarica RAM e EEPROM | - Con il telecomando immettere il codice "4934", premere il tasto "OK" (nel display appare "0" ed infine il tasto II . Con taratura riuscita appare ":" lampieggiante nel display. | | | |
| 2. Rivelatore posizione ruota testine | - Inserire la cassetta campione.<br>- Con il telecomando immettere il codice "4934", premere il tasto "OK" (nel display appare "0" ed infine il tasto "6". Dopo di ciò avviene la taratura automatica del rivelatore di posizione. Durante la taratura appare nel display l´indicazione "A 6". Con taratura riuscita appare "0" nel display.<br>- Annullamento della funzioni speciali: Premere il tasto ⏏ dell´unità comando. | | | |

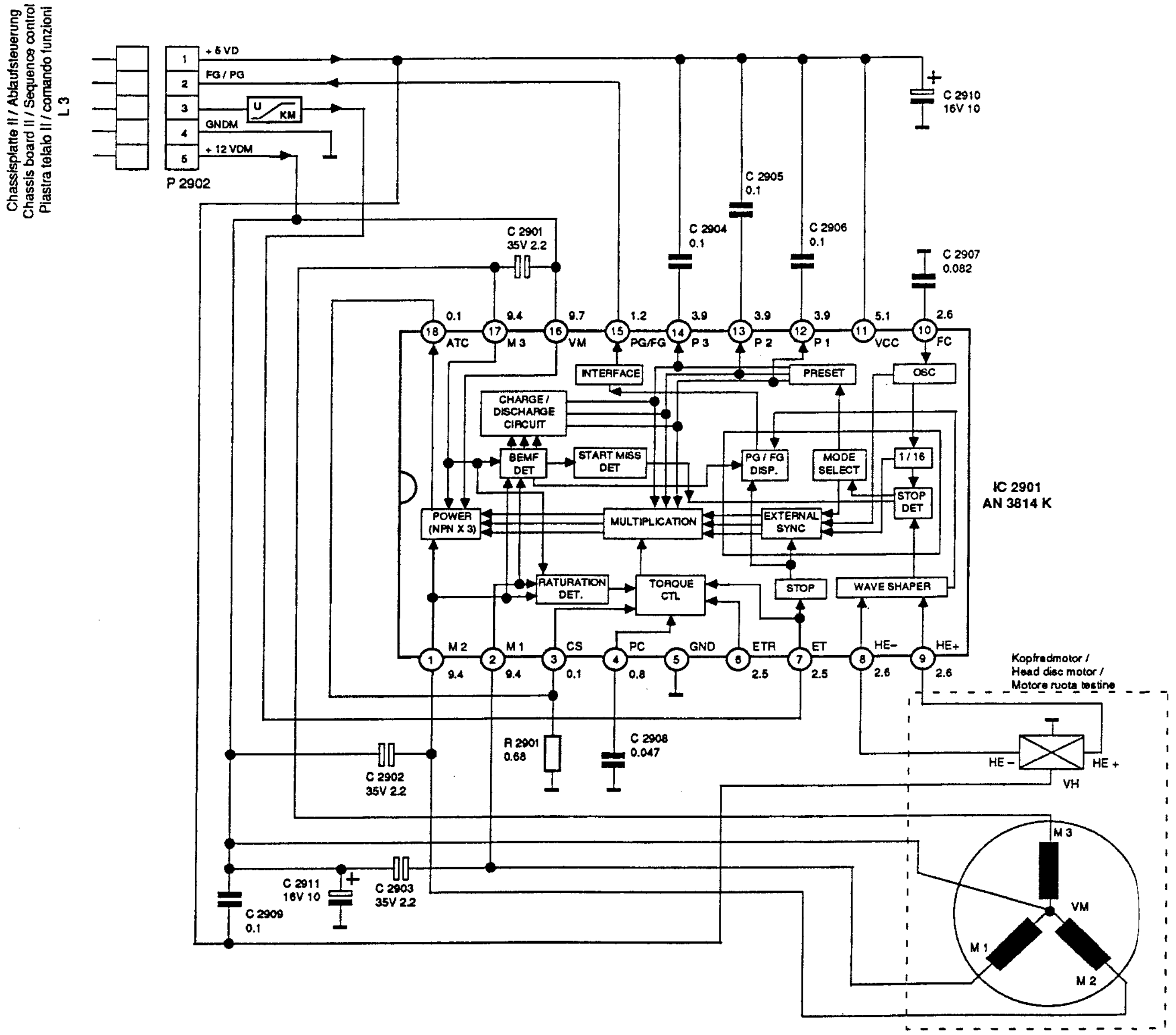
| | | | | |
|---|---|---|---|---|
| 3. Orologio | Collegare IC 590-(7) alla tensione $+5V_D$ mediante R da 10 kΩ<br>Frequenzimetro: IC 590-(7) | Standby | C 590 | Con C 590 regolare la frequenza di cadenza per 1s ± 4µs. Togliere la resistenza da 10kΩ. |
| 4. Esaltazione degli alti | | Funzione televideo: Richiamare più volte la pagina 199, perchè solo così essa viene inserita nuovamente ed è possibile un'analisi d. soglia di errore. | R 746 (HA) | Il regolatore R 746 è di norma regulato completamente a sinistra ( cioè per la più bassa esaltazione: ca. 2dB). Se malgrado un buon segnale d'antenna si notano errori di carattere, R 746 va regolato fino ad eliminare l'errore. Non regolare oltre, poichè ciò accentuerebbe l'errore. |

## Motorsteuerplatte / Motor Control Board / Piastra comando motore

Achtung: Die Positionsnummern im nachfolgenden Schaltplan und im Platinenlayout erscheinen in der Originalplatine ein- oder zweistellig (z.B. C 2901 = C 1; C 2911 = C 11 usw.).

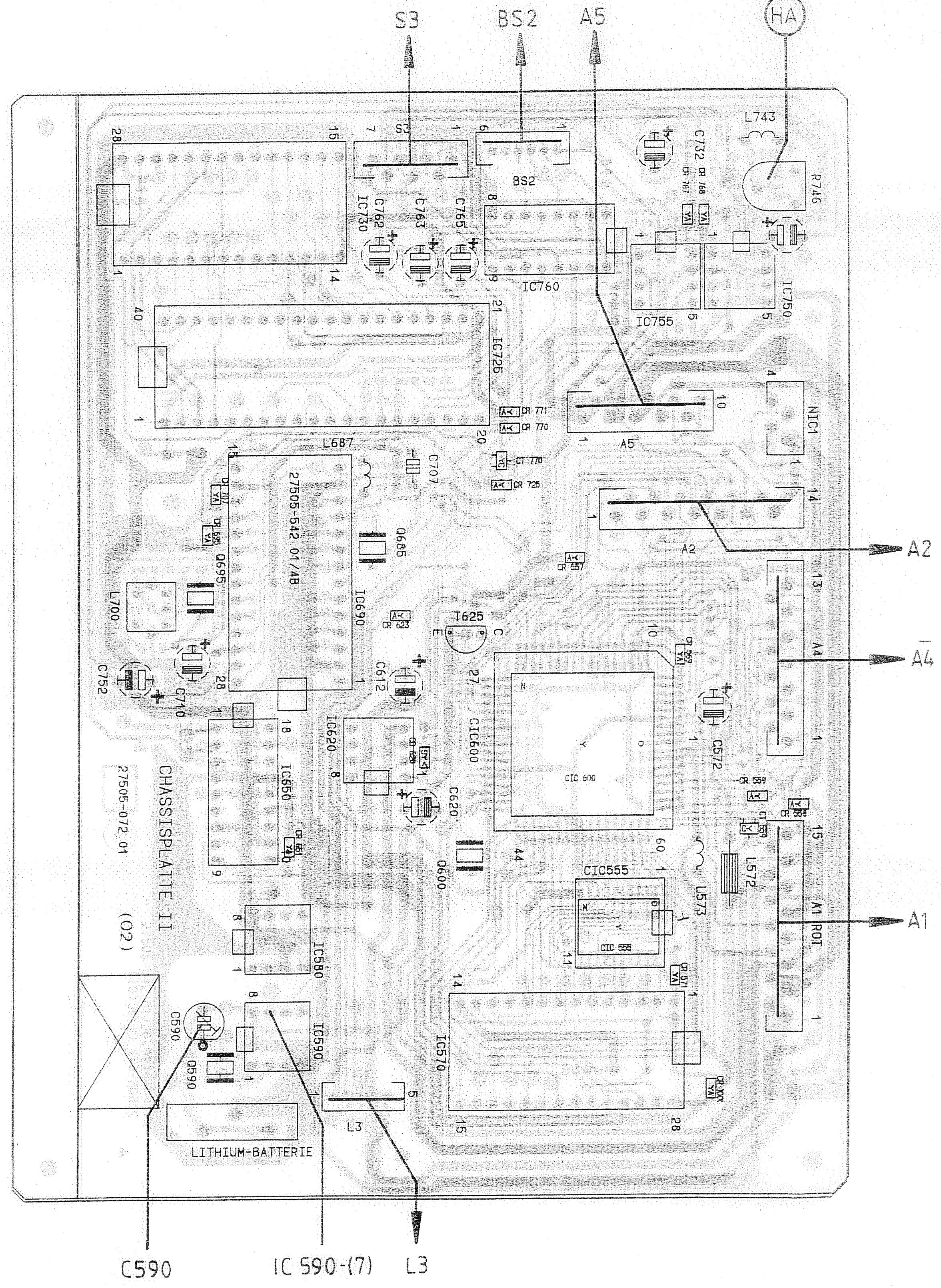
Attention: The Position numbers in the following Circuit Diagram and in the Panel Layouts are shown in the original panel as either a single or two position number (e.g. C 2901 = C 1, C 2911 = C 11 etc.).

Attenzione: I numeri di posizione nel seguente schema e nelle piastre semplificate sono indicati con una due cifre nelle piastre originali (per es. C 2901 = C 1; C 2911 = C 11 ecc.).

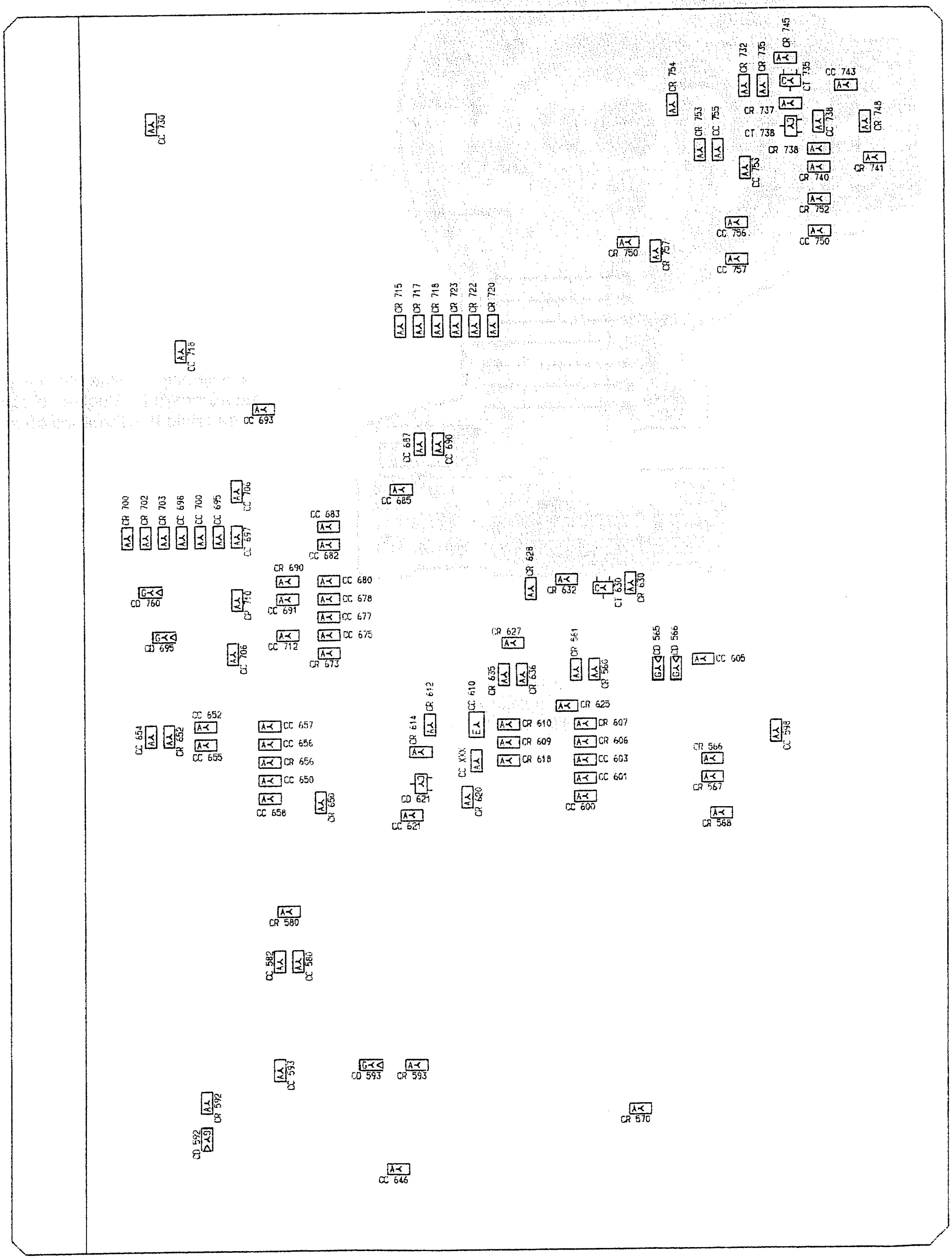

Chassisplatte II / Ablaufsteuerung
Chassis board II / Sequence control
Piastra telaio II / comando funzioni
L 3
1
2
3
4
5
+ 5 VD
FG / PG
U
KM
GNDM
+ 12 VDM
P 2902
C 2901
35V 2.2
C 2910
16V 10
C 2905
0.1
C 2904
0.1
C 2906
0.1
C 2907
0.082
0.1
9.4
9.7
1.2
3.9
3.9
3.9
5.1
2.6
18
17
16
15
14
13
12
11
10
ATC
M 3
VM
PG/FG
P 3
P 2
P 1
VCC
FC
INTERFACE
PRESET
OSC
CHARGE / DISCHARGE CIRCUIT
BEMF DET
START MISS DET
PG / FG DISP.
MODE SELECT
1 / 16
STOP DET
POWER (NPN X 3)
MULTIPLICATION
EXTERNAL SYNC
IC 2901
AN 3814 K
RATURATION DET.
TORQUE CTL
STOP
WAVE SHAPER
M 2
M 1
CS
PC
GND
ETR
ET
HE-
HE+
1
2
3
4
5
6
7
8
9
9.4
9.4
0.1
0.8
2.5
2.5
2.6
2.6
Kopfradmotor / Head disc motor / Motore ruota testine
R 2901
0.68
C 2908
0.047
C 2902
35V 2.2
HE -
HE +
VH
M 3
VM
M 1
M 2
C 2911
16V 10
C 2903
35V 2.2
C 2909
0.1

# Chassisplatte II / Chassis board II / Piastra telaio II

A 1 - Chassisplatte II / Chassis board II / Piastra telaio II
A 2 - Chroma / Croma
A 4 - Chassisplatte II / Chassis board II / Piastra telaio II
A 5 - Bildspeicher / Field store / Memoria d´immagine
BS 2 - Bildspeicher / Field store / Memoria d´immagine
L 3 - Laufwerk / Drive mechanism / Meccanica
S 3 - Chroma / Croma


S3
BS2
A5
HA
L743
R746
C732
BS2
IC730
C762
C763
C765
IC760
IC755
IC750
IC725
A5
NIC1
L687
C707
27505-542 01/4B
Q685
IC690
Q695
L700
A2
A2
T625
C612
CIC600
CIC 600
A4
A4
C752
C710
IC620
IC650
C620
C572
CHASSISPLATTE II
(02)
27505-072.01
Q600
CIC555
CIC 555
L573
L572
A1 ROT
A1
IC580
IC590
C590
Q590
IC570
L3
LITHIUM-BATTERIE
C590
IC 590-(7)
L3

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes

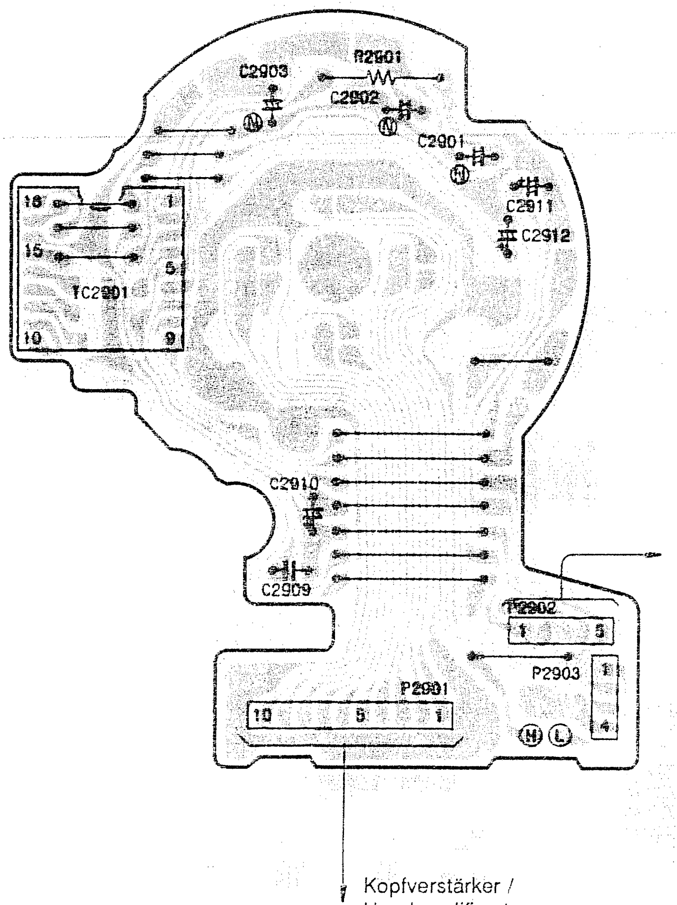

CC 730
CR 754
CR 732
CR 735
CR 745
CT 735
CC 743
CR 753
CC 755
CR 737
CT 738
CC 738
CR 748
CR 738
CC 753
CR 740
CR 741
CR 752
CC 756
CC 750
CR 750
CC 757
CC 757
CR 715
CR 717
CR 718
CR 723
CR 722
CR 720
CC 718
CC 693
CC 687
CC 690
CC 685
CR 700
CR 702
CR 703
CC 698
CC 700
CC 695
CC 704
CC 697
CC 683
CC 682
CR 690
CC 680
CC 691
CC 678
CC 677
CC 712
CC 675
CR 673
CD 760
CP 710
CD 695
CC 706
CR 628
CR 632
CT 630
CR 630
CR 627
CR 561
CD 565
CD 566
CC 605
CR 635
CR 636
CR 560
CC 610
CR 612
CR 625
CR 614
CR 610
CR 607
CR 609
CR 606
CR 618
CC 603
CC 601
CC 600
CC XXX
CR 620
CD 621
CC 621
CC 652
CC 654
CR 652
CC 655
CC 657
CC 656
CR 656
CC 650
CC 658
CR 650
CR 566
CR 567
CR 568
CC 598
CR 580
CC 582
CC 580
CC 593
CD 593
CR 593
CR 592
CD 592
CR 570
CC 646

## Motorsteuerplatte / Motor Control Board / Piastra comando motore

Achtung: Die Positionsnummern im nachfolgenden Schaltplan und im Platinenlayout erscheinen in der Originalplatine ein- oder zweistellig (z.B. C 2901 = C 1; C 2911 = C 11 usw.).

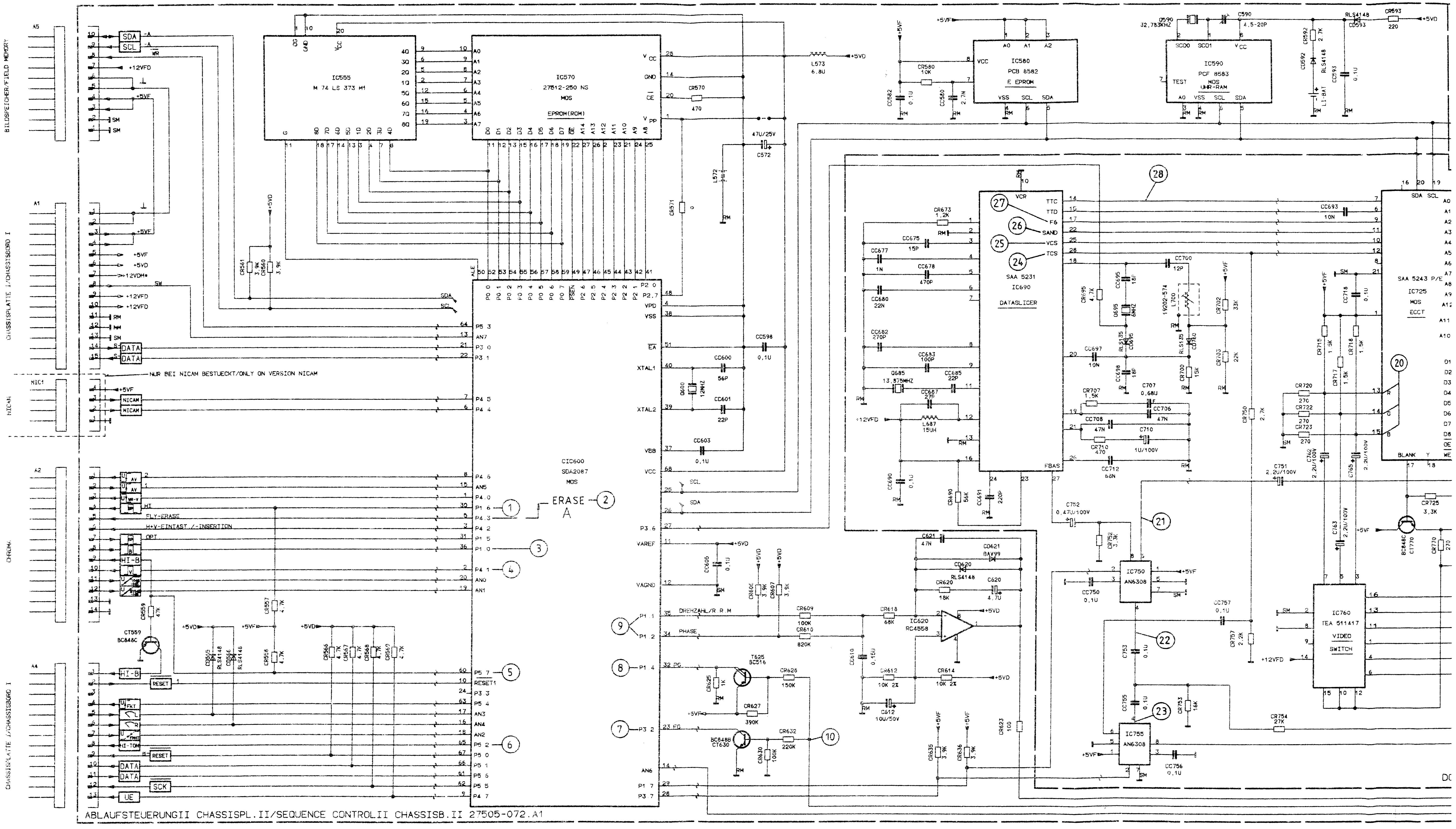
Attention: The Position numbers in the following Circuit Diagram and in the Panel Layouts are shown in the original panel as either a single or two position number (e.g. C 2901 = C 1, C 2911 = C 11 etc.).

Attenzione: I numeri di posizione nel seguente schema e nelle piastre semplificate sono indicati con una due cifre nelle piastre originali (per es. C 2901 = C 1; C 2911 = C 11 ecc.).

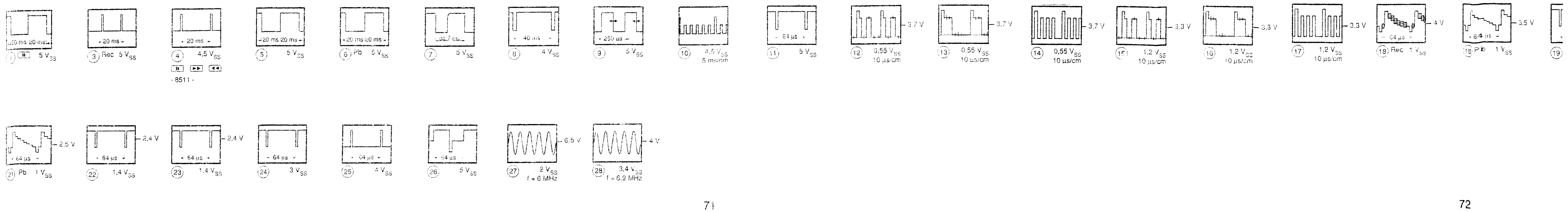

R2901
C2903
C2902
C2901
C2911
C2912
16
1
15
5
TC2901
10
9
C2910
C2909
P2902
1
5
P2903
1
4
P2901
10
5
1
M
L

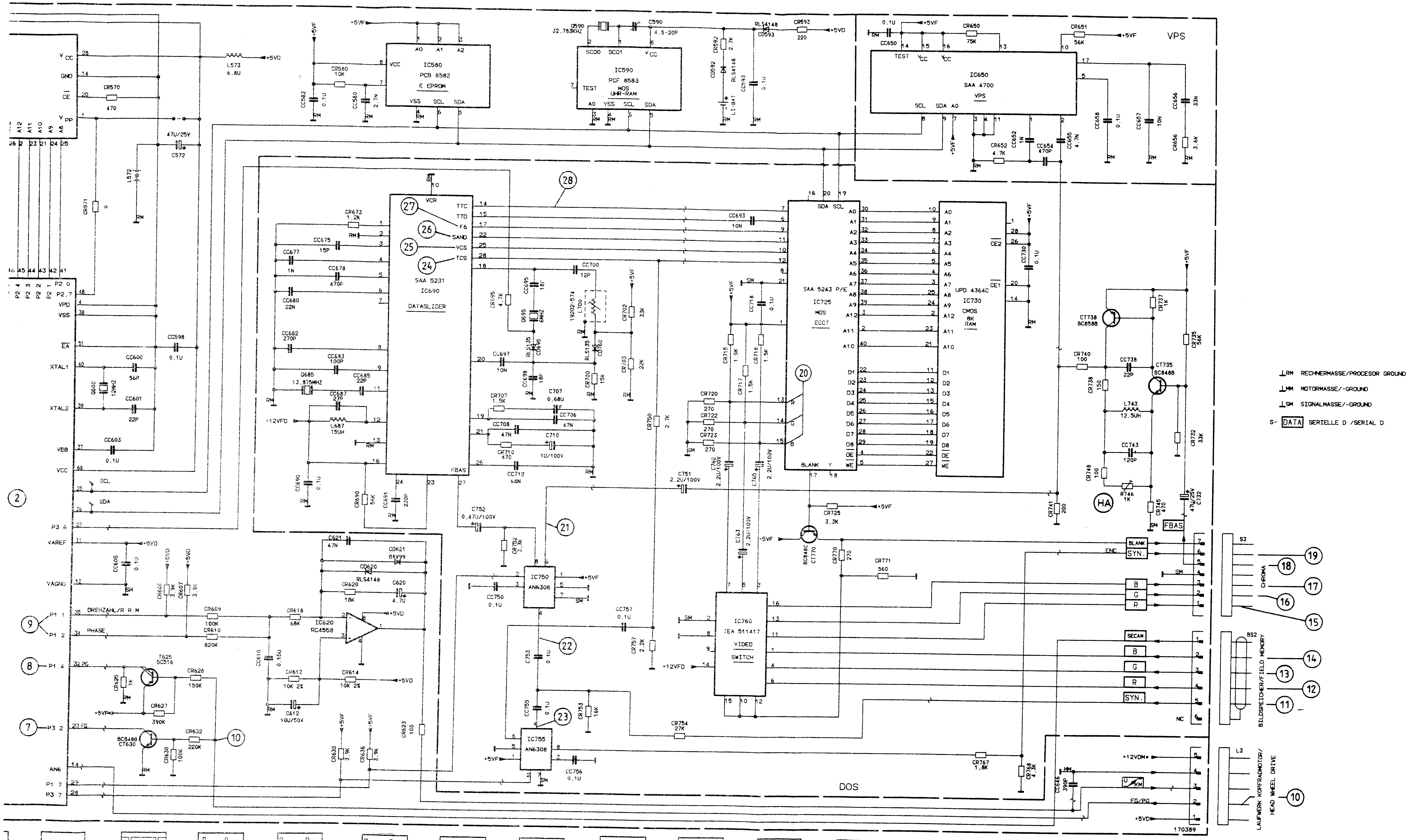
Chassisplatte II / Ablaufsteuerung L3
Chassis board II / Sequence control L3
Piastra telaio II / Comando funzioni L3

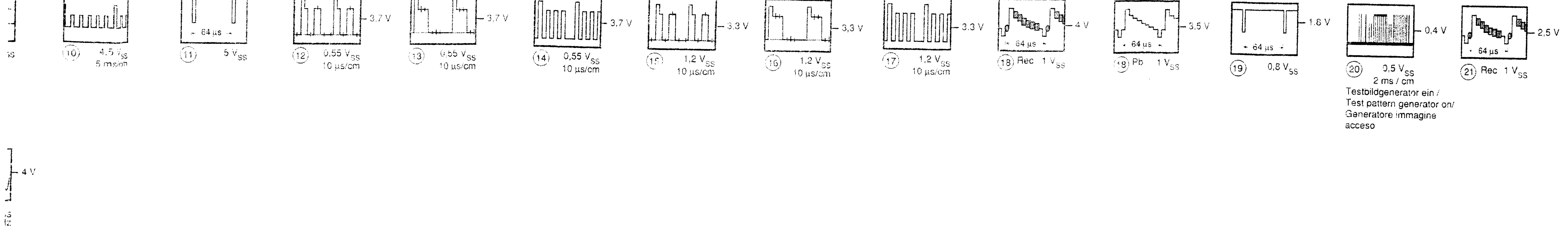
Kopfverstärker /
Headamplifier /
Amplificatore testina


BILDSPEICHER/FIELD MEMORY
CHASSISPLATTE I/CHASSISBOARD I
NICAM
CHROMA
CHASSISPLATTE I/CHASSISBOARD I
IC555 M 74 LS 373 H1
IC570 27512-250 NS MOS EPROM(ROM)
CIC600 SDA2087 MOS
IC580 PCB 8582 E EPROM
IC590 PCF 8583 MOS UHR-RAM
SAA 5231 IC690 DATASLICER
SAA 5243 P/E IC725 MOS ECCT
IC620 RC4558
IC750 AN6308
IC755 AN6308
IC760 TEA 511417 VIDEO SWITCH
NUR BEI NICAM BESTUECKT/ONLY ON VERSION NICAM
ERASE A
DREHZAHL/R.P.M
PHASE
FLY-ERASE
H+V-EINTAST./-INSERTION
RESET
DATA
SCK
UE
HI-B
HI-TON
ABLAUFSTEUERUNGII CHASSISPL.II/SEQUENCE CONTROLII CHASSISB.II 27505-072.A1

ABLAUFSTEUERUNGII CHASSISPL.II/SEQUENCE CONTROLII CHASSISB.II 27505-072.A1




IC580
PCB 8582
E EPROM
IC590
PCF 8583
MOS
UHR-RAM
32,768KHZ
IC650
SAA 4700
VPS
IC690
SAA 5231
DATASLICER
IC725
SAA 5243 P/E
MOS
ECCT
IC730
UPD 4364C
CMOS
8K
RAM
IC620
RC4558
IC750
AN6308
IC755
AN6308
IC760
TEA 511417
VIDEO
SWITCH
T625
BC516
CT630
BC848B
CT738
BC858B
CT735
BC848B
CT770
BC848C
L573
6,8U
L687
15UH
L743
12,5UH
Q685
13,875MHZ
Q600
12MHZ
Q695
6MHZ
VCC
GND
CE
VPP
EA
XTAL1
XTAL2
VEB
VCC
SCL
SDA
P3 6
VAREF
VAGND
P1 1
P1 2
P1 4
P3 2
AN6
P1 7
P3 7
DREHZAHL/R.P.M
PHASE
32 PG
23 FG
TTC
TTD
F6
SAND
VCS
TCS
FBAS
BLANK
ENC
SYN.
B
G
R
SECAM
NC
S3
CHROMA
BS2
BILDSPEICHER/FIELD MEMORY
L3
LAUFWERK KOPFRADMOTOR/
HEAD WHEEL DRIVE
+12VDM
FG/PG
+5VD
+5VF
+5VD
-5VF
+12VFD
VPS
DOS
HA
170389
⊥RM RECHNERMASSE/PROCESOR GROUND
⊥MM MOTORMASSE/-GROUND
⊥SM SIGNALMASSE/-GROUND
S- DATA SERIELLE D./SERIAL D.
(2)
(7)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
(16)
(17)
(18)
(19)
(20)
(21)
(22)
(23)
(24)
(25)
(26)
(27)
(28)



Testbildgenerator ein /
Test pattern generator on/
Generatore immagine
acceso

**Chassisplatte II - Ablaufsteuerung II / DOS**
**Chassis board II - Sequence control II / DOS**
**Piastra telaio II - Comando funzioni II / DOS**

## (D) Tuner / Modulator

Im Reparaturfall ist der Tuner/Modulator - aus Gründen des umfangreichen Abgleichs - in einer der Servicestellen zu tauschen.
**Servicearbeiten nach Bausteinwechsel:** Abgleich Nr 1, 3 des ZF-Verstärkers

**Hinweis:** Sollten Störungen (Moiré, Schlangenlinien) am FFS-Bildschirm auftreten, so können Sie die Frequenz des Modulators zwischen K 30 und K 40 variieren und somit die Störungen beseitigen.

## (GB) Tuner / Modulator

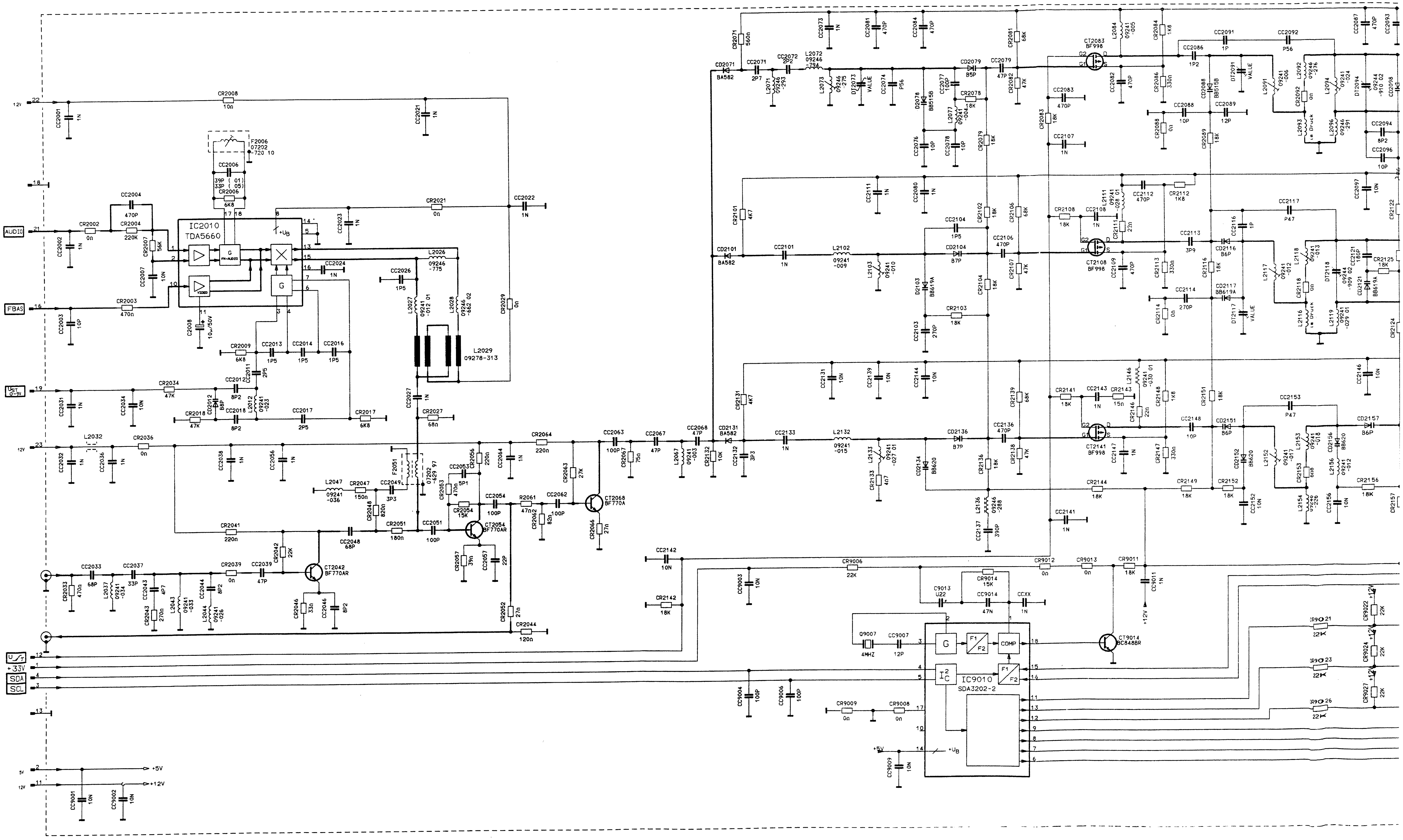
For reasons of the extensive alignment procedure, it is recommended to return a defective Tuner/Modulator to the Service Organization to get a new one.
**Servicing work after changing board:** Alignment no. 1, 3 of the IF Amplifier

**Note:** Should interference (Moire, waving lines) appeare onto the screen of the CTV the frequency of the modulator can be adjusted between CH 30 and CH 40 so that interference is avoided.

## (I)

A caus
**Lavori**

**Nota:**



IC2010
TDA5660
IC9010
SDA3202-2
AUDIO
FBAS
U_ST
+33V
SDA
SCL
12V
5V
+5V
+12V
CT2042 BF770AR
CT2054 BF770AR
CT2068 BF770A
CT2083 BF998
CT2108 BF998
CT2141 BF998
CT9014 BC848BR
L2029 09278-313
F2006 07202-720 10
Q9007 4MHZ
G
COMP
F1/F2
I²C
+U_B

chen

## (GB) Tuner / Modulator

For reasons of the extensive alignment procedure, it is recommended to return a defective Tuner/Modulator to the Service Organization to get a new one.

**Servicing work after changing board:** Alignment no. 1, 3 of the IF Amplifier

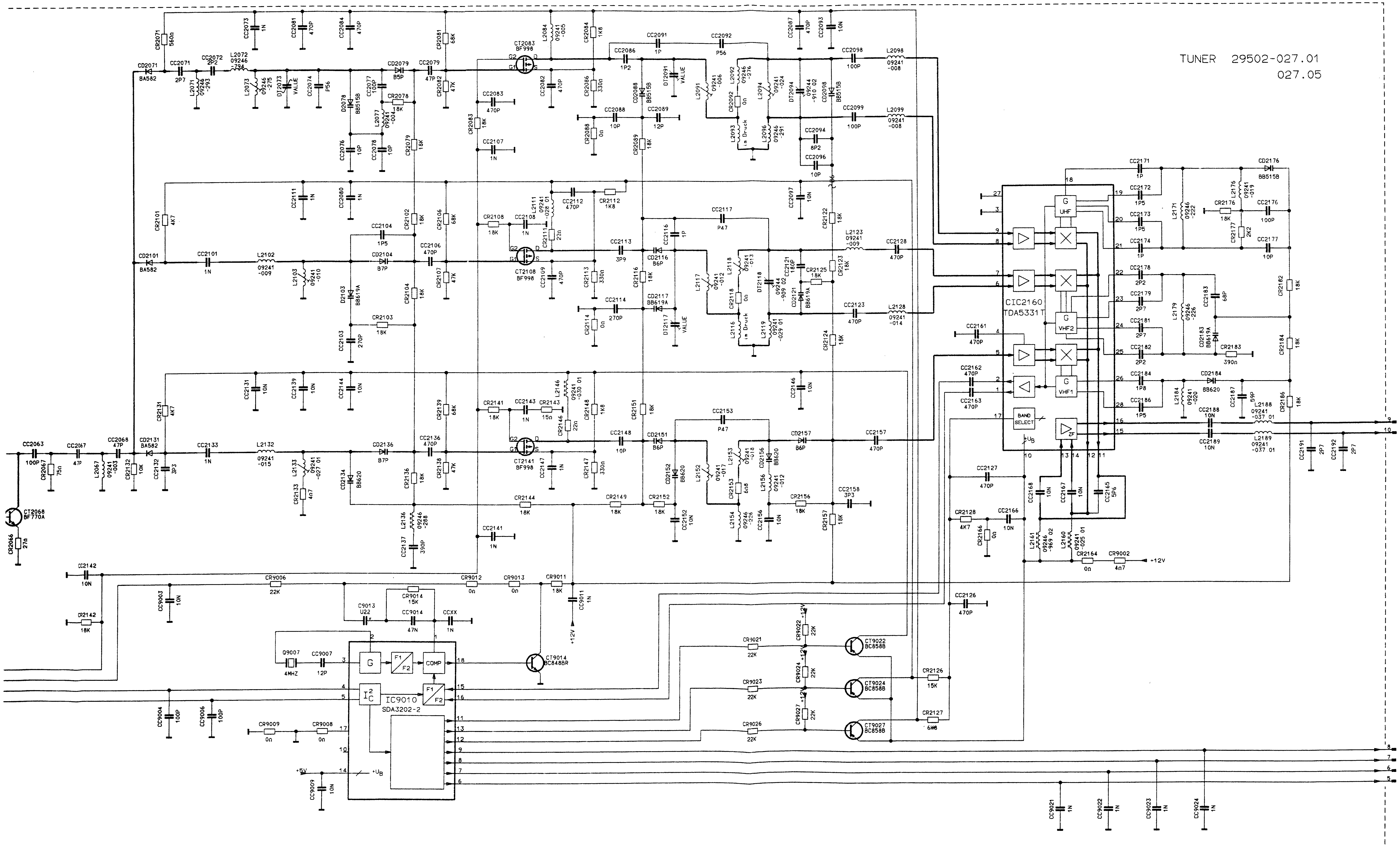
**Note:** Should interference (Moire, waving lines) appeare onto the screen of the CTV the frequency of the modulator can be adjusted between CH 30 and CH 40 so that interference is avoided.

## (I) Tuner / Modulatore

A causa dei complessi lavori di taratura, in caso di guasto il modulo Tuner/Modulator va sostituito presso uno dei punti di assistenza.

**Lavori da eseguire dopo la sostituzione del modulo:** taratura no. 1, 3 dell´amplificatore FI.

**Nota:** Nel caso di presentassero dei disturbi (moirè, serpentine) sullo schermo del televisore, la frequenza del modulatore può venir variata tra K 30 e K 40, consentendo in tal modo l´eliminazione di questi disturbi.



TUNER 29502-027.01
027.05
CIC2160
TDA5331T
UHF
VHF2
VHF1
G
BAND SELECT
ZF
+UB
IC9010
SDA3202-2
I²C
G
F1/F2
COMP
Q9007 4MHZ
CC9007 12P
CT2083 BF998
CT2108 BF998
CT2141 BF998
CT2068 BF770A
CT9014 BC848BR
CT9022 BC858B
CT9024 BC858B
CT9027 BC858B
CD2071 BA582
CD2101 BA582
CD2131 BA582
CD2079 B5P
CD2104 B7P
CD2136 B7P
CD2116 B6P
CD2117 BB619A
CD2151 B6P
CD2157 B6P
CD2176 BB515B
CD2184 BB620
D2078 BB515B
D2103 BB619A
CD2134 BB620
CD2152 BB620
CD2156 BB620
CD2183 BB619A
CD2121 BB619A
CD2098 BB515B
DT2073 VALUE
DT2091 VALUE
DT2117 VALUE
L2072 09246 -794
L2098 09241 -008
L2099 09241 -008
L2123 09241 -009
L2128 09241 -014
L2188 09241 -037 01
L2189 09241 -037 01
L2161 09246 -969 02
L2160 09241 -025 01
CC2063 100P
CC2067 47P
CC2068 47P
CR2066 27n
CR2067 75n
CR2132 10K
CC2133 1N
CC2142 10N
CR2142 18K
CR9006 22K
CR9012 0n
CR9013 0n
CR9011 18K
CC9011 1N
CR9014 15K
CC9014 47N
CCXX 1N
C9013 U22
CC9003 10N
CC9004 100P
CC9006 100P
CR9009 0n
CR9008 0n
CC9009 10N
+5V
+12V
CR9021 22K
CR9022 22K
CR9023 22K
CR9024 22K
CR9026 22K
CR9027 22K
CR2126 15K
CR2127 6K8
CC2126 470P
CC2127 470P
CR2128 4K7
CR2166 0n
CC2166 10N
CC2161 470P
CC2162 470P
CC2163 470P
CC2168 10N
CC2167 10N
CC2165 5P6
CR2164 0n
CR9002 4n7
CC2188 10N
CC2189 10N
CC2191 2P7
CC2192 2P7
CR2182 18K
CR2184 18K
CR2186 18K
CC9021 1N
CC9022 1N
CC9023 1N
CC9024 1N
P4
P5
P6
P7
ZF
ZF

# Tuner / Modulator
# Tuner / Modulatore

## D ZF-Verstärker

Der ZF-Verstärker hat die Aufgabe, das vom Tuner kommende Signal zu verstärken und zu demodulieren. Es entstehen dabei das FBAS-Signal sowie die NF-Signale:
- Mono (ST3-2)
- Stereo (Rechts: ST3-4; Links: ST3-5)
- Zweiton (Ton 1: ST3-5; Ton 2: ST3-4)

Vom Tuner kommt das ZF-Signal über die Kontakte ZF-7/ZF-8 und das Filter (F 3708) an das Oberflächenwellenfilter (F 3710). Hier erfolgt die Signaltrennung.

**Bildverarbeitung**

Über IC 3710-(15), -(16) wird die Bild-ZF eingespeist. Es folgt ein regelbarer Breitbandverstärker mit Synchrondemodulator, ein Videoverstärker, sowie die Regelspannungserzeugung für den Tuner. Von IC 3710-(11) gelangt das FBAS-Signal über den Emitterfolger T 3750, Kontakt S2-2 und den Chromabaustein zum Videobaustein 2.

**Tonverarbeitung**

Über IC 3710-(18), -(19) gelangt das ZF-Signal an einen Breitbandverstärker mit Quadraturdemodulator. Nach einem weiteren Verstärker steht das Ton-ZF-Signal an IC 3710-(21). Je nachdem um welches Signal es sich handelt (Mono, Stereo, Zweiton) wird es dem IC 3770 an den Pins 11 und 14 zugeführt. Dieses IC besteht aus zwei getrennten Begrenzerverstärkern mit FM-Demodulatoren und separaten NF-Ausgängen (Pins 4 und 5).

**Mono-Ton**

Bei Monosendungen ist nur an IC 3790-(8) ein Signal vorhanden. Die Auswerteschaltung im Decoder, IC 3790, erkennt den MONO-Status und teilt dies über den $I^2C$-Bus (Pins 2 / 3) dem Ablaufrechner B mit. Von ihm werden über den $I^2C$-Bus die Ausgangswahlschalter im IC 3790 auf MONO gesetzt und das Ton-Signal auf die Ausgänge Pin 13 / 14 geschaltet. Von hier gelangt es über die Kontakte ST3-4, -5 zum Tonbaustein für die FM-Aufzeichnung. Für die Längsspuraufzeichnung führt man das Tonsignal von IC 3770-(4) über T 3786 und den Stecker ST3-2 dem Ton-Baustein zu.

**Stereo-Ton**

Bei Stereosendungen steht an IC 3790-(8) das Summensignal $\frac{L+R}{2}$ und an Pin 7 das R-Signal mit Pilotton (mit 117Hz amplitudenmoduliert). Durch eine Auswerteschaltung erkennt der Decoder anhand der 117 Hz den Stereo-Status und teilt dies über den $I^2C$-Bus dem Ablaufrechner B mit. Dieser steuert über den $I^2C$-Bus die Matrix im IC 3790 so, daß aus den Signalen $\frac{L+R}{2}$ und R die Stereosignale L und R entstehen und setzt den Ausgangswahlschalter auf "Stereo". An den Pins 14 (Links) und 13 (Rechts) werden die Signale ausgekoppelt und über die Kontakte ST3-5, -4 dem Tonbaustein zugeführt.

**Zweiton**

Bei Zweitonsendungen steht an IC 3750-(8) Ton 1 und an IC 3750-(7) Ton 2 mit Pilotton (274 Hz amplitudenmoduliert). Durch eine Auswerteschaltung erkennt der Decoder anhand der 274 Hz den Zweiton-Status und teilt dies dem Ablaufrechner B über den $I^2C$-Bus mit. Von diesem werden über den $I^2C$-Bus die beiden Kanäle durch den Ausgangswahlschalter auf Ton 1 (Pin 14) und Ton 2 (Pin 13) geschaltet. Über Kontakt ST3-2 führt man Ton 1 dem Tonbaustein zur Längsspuraufzeichnung zu.

## GB IF-Amplifier

The IF amplifier has the task of amplifying and demodulating the signal coming in from the Tuner. It produces the CCVS signals and the following AF signals:
- Mono (ST3-2)
- Stereo (Right; ST3-4; Left; ST3-5)
- Two Channel sound (Sound Channel 1, ST3-5; Sound Channel 2, ST 3-4)

The IF signal from the Tuner is fed in on contacts ZF-7/ZF-8 and through the Filter (F 3708) to the Surface Accoustic Wave Filter (F 3710) in which the signals are separated.

**Video Processing**

The Video IF is fed in on IC 3710-(15), -(16). The signal passes through a gain controlled wide-band amplifier with synchronous demodulator, and a Video Amplifier. Internally, there is also a gain control voltage generation stage for the Tuner. From IC 3710-(11) the CCVS signal is fed via the emitter follower T 3750, contact S2-2 and the Chroma Module to the Video Module 2.

**Sound Processing**

The IF signal is fed in on IC 3710-(18), -(19) and passes through an internal Wide-Band Amplifier with Quadrature Demodulator. After passing through an additional amplifier the Sound-IF signal is present on IC 3710-(21). According to the signal being processed, (Mono, Stereo, Two Channel Sound) the signal is fed to Pins 11 and 14 of IC 3770. This IC contains two separate limiting amplifiers with FM demodulators and separate AF outputs (Pins 4 and 5).

**Mono Sound**

On Mono transmissions only one signal is present on IC 3790-(8). The evaluation circuit in the Decoder, IC 3790, identifies the Mono Status and advises the Sequence Computer B via the $I^2C$ Bus (Pins 2/3). From the Sequence Computer, via the $I^2C$ Bus, the output selection switch in IC 3790 is set to MONO and the sound signal is connected to the output Pins 13/14. From this point the signal is taken via ST3-4, -5 to the Sound Module for FM-recording. For the Linear Track recording, the sound signal is fed from IC 3770-(4) via T 3786 and the contact ST3-2 to the Sound Module.

**Stereo-Sound**

On a Stereo Transmission the Sum Signal $\frac{L+R}{2}$ is present on IC 3790-(8) and the R signal with pilot tone (117 Hz Amplitude Modulated) is present on Pin 7. Due to the evaluation circuit in the Decoder the Stereo Status is identified from the presence of the 117 Hz signal and the Sequence Computer B is advised via the $I^2C$ Bus. The Sequence Computer controls the matrix in IC 3790 via the $I^2C$ bus so that from the signals $\frac{L+R}{2}$ and R, the Stereo signals L and R are obtained and it also sets the output selection switch to the "Stereo" setting. On Pins 14 (Left) and 13 (Right) the signals are fed out and applied via the contacts ST3-5, -4 to the Sound Module.

**Two Channel Sound**

On a Two Channel sound transmission, the Sound Channel 1 is present on IC 3750-(8) and the Sound Channel 2 with Pilot Tone (274 Hz Amplitude Modulated) is present on IC 3750-(7). Due to the evaluation circuit the Decoder identifies the Two Channel Status from the 274 Hz present and advises the Sequence Computer B via the $I^2C$. The Sequence Computer B controls the output selection switch via the $I^2C$ Bus so that the sound Channel 1 (Pin 14) and Sound Channel 2 (Pin 13) are provided. The Sound Channel 1 is fed via the contact ST3-2 to the Sound module so that the linear sound track recording can be carried out.

## I Amplificatore FI

L'amplificatore FI ha il compito di amplificare e di demodulare il segnale proveniente dal tuner. Si formano in tal modo il segnale FBAS ed i segnali BF:
- mono (ST3-2)
- stereo (destra: ST3-4; sinistra: ST3-5)
- doppio audio (audio 1: ST3-5; audio 2: ST3-4).

Il segnale FI giunge dal tuner al filtro ad onde di superficie (F 3710) attraverso i contatti FI-7/FI-8 ed il filtro (F 3708). Qui ha luogo la separazione dei segnali.

**Elaborazione video**

Tramite IC 3710-(15), -(16) viene applicata la FI video. Segue un amplificatore a larga banda regolabile con demodulatore di sincronismo un amplificatore video e la generazione della tensione di regolazione per il tuner. Da IC 3710-(11) il segnale FBAS arriva all'insequitore d'emettitore T 3750 ed attraverso il contatto S2-2 ed il modulo croma esso raggiunge il modulo video 2.

**Elaborazione audio**

Tramite IC 3710-(18), -(19), il segnale FI giunge ad un amplificatore a larga banda con demodulatore quadratico. Dopo un ulteriore amplificatore, il segnale FI audio è presente in IC 3710-(21). A seconda di quale segnale si tratta (mono, stereo o doppio audio), esso viene inviato ai pin 11 e 14 di IC 3770. Questo integrato è costituito da due amplificatori di limitazione separati con demodulatori FM ed uscite BF separate (pin 4 e 5).

**Audio mono**

Nel caso di trasmisioni mono è presente soltanto un segnale in IC 3790-(8). Il circuito di valutazione nel decoder dell'IC riconosce di trovarsi in presenza di un segnale MONO e comunica ciò tramite il bus $I^2C$ al µC del comando funzioni B (pin 2/3). Da questo, mediante il bus $I^2C$, vengono commutati in MONO i selettori d'uscita in IC 3790 ed il segnale audio viene applicato alle uscite (pin 13 e 14). Da qui, per mezzo del contatto ST3-4, esso giunge al modulo audio per la registrazione FM. Per la registraz. della traccia longitudinale il segnale audio passa da IC 3770-(4) al modulo audio attraverso T 3786 ed il connettore ST3-2.

**Audio stereo**

Nel caso di trasmissioni stereo, in IC 3790-(8) è presente il segnale somma $\frac{L+R}{2}$ ed al pin 21 il segnale R con frequenza pilota (modulata in ampiezza con 117 Hz). Grazie ad un circuito di valutazione, il decoder riconosce dai 117 Hz la presenza di un segnale stereo e, tramite il bus $I^2C$, lo communica al µC di comando funzioni B. Questo comanda la matrice in IC 3790 mediante il bus $I^2C$ in modo da ricavare dai segnali $\frac{L+R}{2}$ e R i segnali stereo L e R e posizionare in "stereo" i selettori di uscita. I segnali vengono prelevati ai pin 14 (sinistra) e 13 (destra) ed inviati al modulo audio tramite i contatti ST 3-5, -4.

**Doppio audio**

Nel caso di trasmissioni con doppio audio, su IC 3750-(8) è presente l'audio 1 e su IC 3750-(7) l'audio 2 con frequenza pilota (modulata in ampiezza con 274 Hz). Per mezzo di un circuito di valutazione, in base ai 274 Hz il decoder identifica una trasmissione con doppio audio e lo comunica al µC di comando funzioni B attraverso il bus $I^2C$. Sempre utillizzando il bus, esso commuta i due canali mediante il selettore d'uscita su audio 1 (pin 14) e audio 2 (pin 13). Tramite il contatto ST3-2, l'audio 1 viene inviato al modulo audio per la registrazione della traccia longitudinale.

## D Abgleich

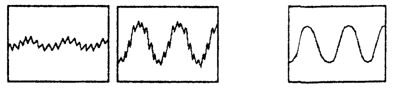
**Meßgeräte:**
Oszilloskop, Tastkopf 10 : 1, Voltmeter, Farbgenerator mit Stereocoder
**Servicearbeiten nach Bausteinwechsel:**
Abgleich Nr. 1, 3

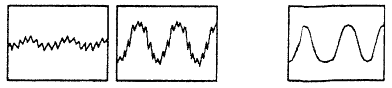
## GB Adjustment

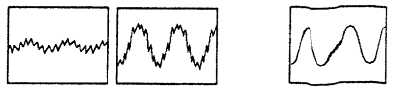
**Test equipment:**
Oscilloscope, test probe 10 : 1, Voltmeter, Colour generator with stereo coder
**Servicing work after changing board:**
Adjustments no. 1, 3

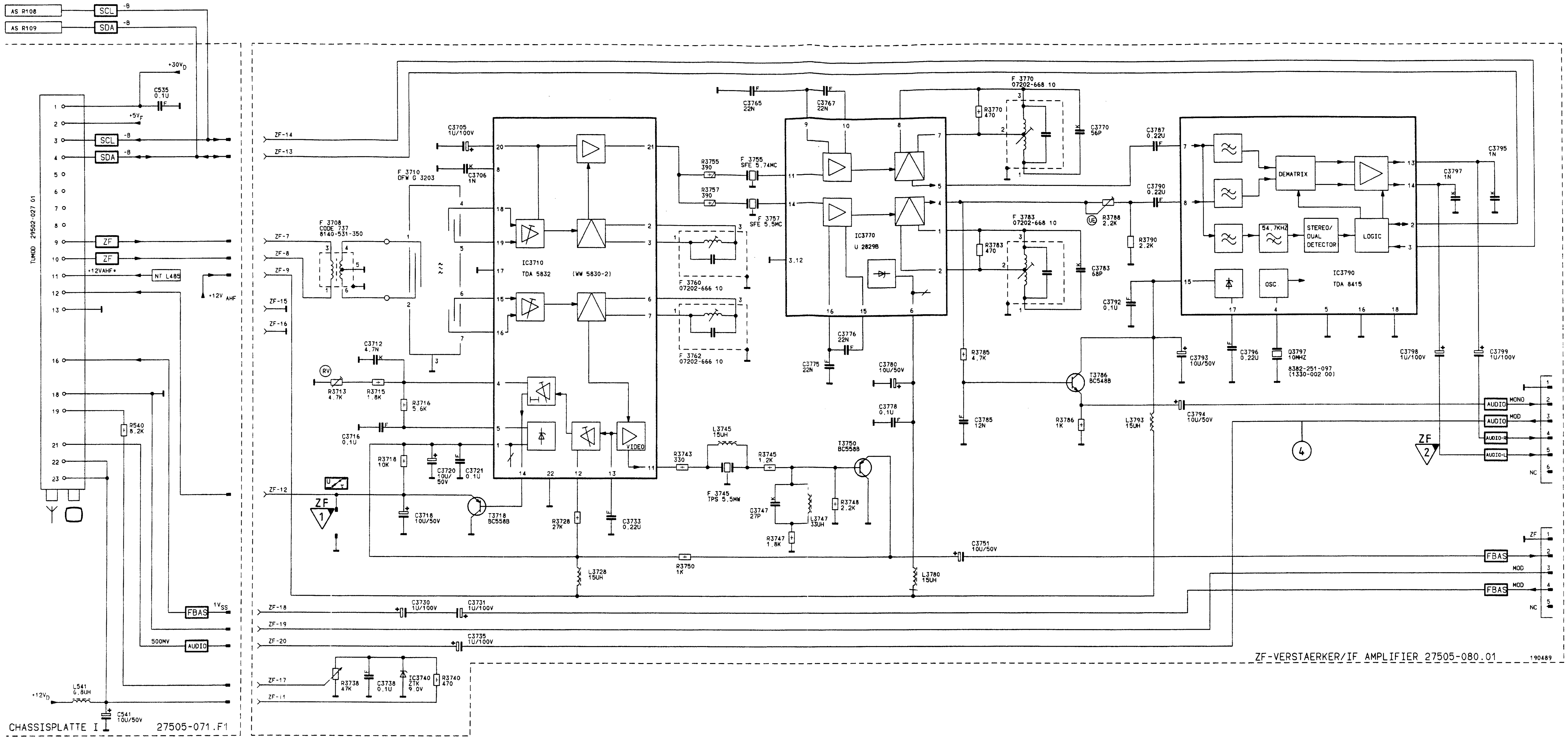
## I Taratura :

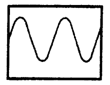
**Strumenti:**
Oscilloscopio, sonda 10 : 1, voltmetro, generatore colore con stereocoder
**Lavori da eseguire dopo la sostituzione del modulo:** tarature no. 1, 3

| D Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. Regelspannungsverzögerung | Sendernormtestbild (oberer UHF-Bereich, Antennenpegel 60 dBµV) in betriebswarmes Gerät einspeisen.<br>R 3713 im Uhrzeigersinn auf Anschlag stellen.<br>Voltmeter: MP ZF ▽1 | Aufnahme<br>A / W-Cassette | R 3713 (RV) | Spannung auf 6,8V...7V einstellen. |
| 2. Übersprechen | Testbild mit Stereoton einspeisen.<br>Oszilloskop:<br>MP ZF ▽2 | Aufnahme<br>A / W-Cassette | R 3788 (UE) | Minimales Übersprechen einstellen.<br><br>Falsch Richtig |
| 3. Kanaleinstellung |  | Bespielte Cassette wiedergeben | R 3738 | Mit Regler R 3738 gewünschten Kanal einstellen. |

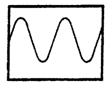
| GB Adjustment | Preparation | Cassette Operating mode | Adjust with | Adjustment |
|---|---|---|---|---|
| 1. Delayed AGC voltage | Feed in a standard test pattern (upper UHF-range, 60 dBµV aerial signal) into a warmed-up set.<br>Turn R 3713 fully clockwise .<br>Voltmeter: MP ZF ▽1 | Record<br>R / P cassette | R 3713 (RV) | Set voltage to 6.8V...7V. |
| 2. Cross talk | Feed in a test pattern with stereo sound.<br>Oscilloscope:<br>MP ZF ▽2 | Record<br>R / P cassette | R 3788 (UE) | Set minimal cross talk<br><br>Incorrect Correct |
| 3. Channel Adjustment |  | Playback a prerecorded cassette. | R 3738 | With the control R 3738 adjust for the required channel. |

| I Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Ritardo tensione di regolazione | Applicare il monoscopio normalizz. d. trasmett. (banda UHF super., livello d´antenna 60 dBµV) con apparec. caldo.<br>Ruotare compl. in senso orario R 3713.<br>Voltmetro:MP ZF ▽1 | Registrazione<br>Cassetta A/W | R 3713 (RV) | Regolare la tensione a 6,8V...7V. |
| 2. Diafonia | Applicare il monoscopio con segnale stereo.<br>Oscilloscopio:<br>MP ZF ▽2 | Registrazione<br>Cassetta A/W | R 3788 (UE) | Regolare per una diafonia minima<br><br>errato orretto |
| 3. Regolazione del canale |  | Riprodurre la cassetta registrata. | R 3738 | Ruotare il regolatore R 3738 ad individuare il canale desiderato. |

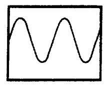

AS R108
AS R109
SCL
SDA
+30V
C535 0.1U
+5V
ZF
+12VAHF
NF L485
+12V AHF
TUMOD 29502-027 01
R540 8.2K
FBAS
AUDIO
500MV
L541 6.8UH
+12V
C541 10U/50V
CHASSISPLATTE I
27505-071.F1
ZF-14
ZF-13
ZF-7
ZF-8
ZF-9
ZF-15
ZF-16
ZF-12
ZF-18
ZF-19
ZF-20
ZF-17
ZF-11
C3705 1U/100V
F 3710 OFW G 3203
C3706 1N
F 3708 CODE 737 8140-531-350
IC3710 TDA 5832 (WW 5830-2)
C3712 4.7N
RV
R3713 4.7K
R3715 1.8K
R3716 5.6K
C3716 0.1U
R3718 10K
C3720 10U/50V
C3721 0.1U
C3718 10U/50V
T3718 BC558B
R3728 27K
C3733 0.22U
L3728 15UH
C3730 1U/100V
C3731 1U/100V
C3735 1U/100V
R3738 47K
C3738 0.1U
IC3740 ZTK 9.0V
R3740 470
VIDEO
R3755 390
R3757 390
F 3755 SFE 5.74MC
F 3757 SFE 5.5MC
C3765 22N
C3767 22N
F 3760 07202-666 10
F 3762 07202-666 10
R3743 330
L3745 15UH
F 3745 TPS 5.5MW
R3745 1.2K
C3747 27P
L3747 33UH
R3747 1.8K
R3748 2.2K
T3750 BC558B
R3750 1K
L3780 15UH
C3751 10U/50V
IC3770 U 2829B
C3776 22N
C3775 22N
C3780 10U/50V
C3778 0.1U
F 3770 07202-668 10
R3770 470
C3770 56P
F 3783 07202-668 10
R3783 470
C3783 68P
R3785 4.7K
C3785 12N
T3786 BC548B
R3786 1K
L3793 15UH
R3788 2.2K
R3790 2.2K
C3787 0.22U
C3790 0.22U
C3792 0.1U
C3793 10U/50V
C3794 10U/50V
IC3790 TDA 8415
DEMATRIX
54.7KHZ
STEREO/ DUAL DETECTOR
LOGIC
OSC
C3796 0.22U
Q3797 10MHZ 8382-251-097 (1330-002 00)
C3795 1N
C3797 1N
C3798 1U/100V
C3799 1U/100V
AUDIO
AUDIO-R
AUDIO-L
MONO
MOD
NC
ST3
AUDIO IN OUT
S2
CHROMA III
ZF-VERSTAERKER/IF AMPLIFIER 27505-080.01
190489



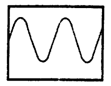
①R ca. 0,85 $V_{SS}$ f = 1 kHz
25 kHz Hub/
Deviation/Deviazione



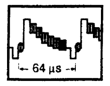
②R 1,4 $V_{SS}$ f = 1 kHz
25 kHz Hub/
Deviation/Deviazione



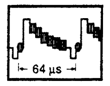
③R 1,4 $V_{SS}$ f = 1 kHz
25 kHz Hub/
Deviation/Deviazione



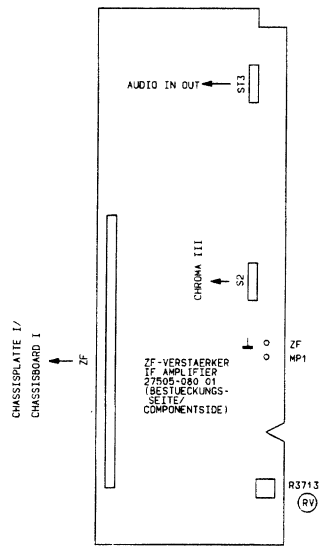
④R/P 1,4 $V_{SS}$ f = 1 kHz



⑤R 1 $V_{SS}$ 10 µs/cm



⑥R/P 1 $V_{SS}$ 10 µs/cm

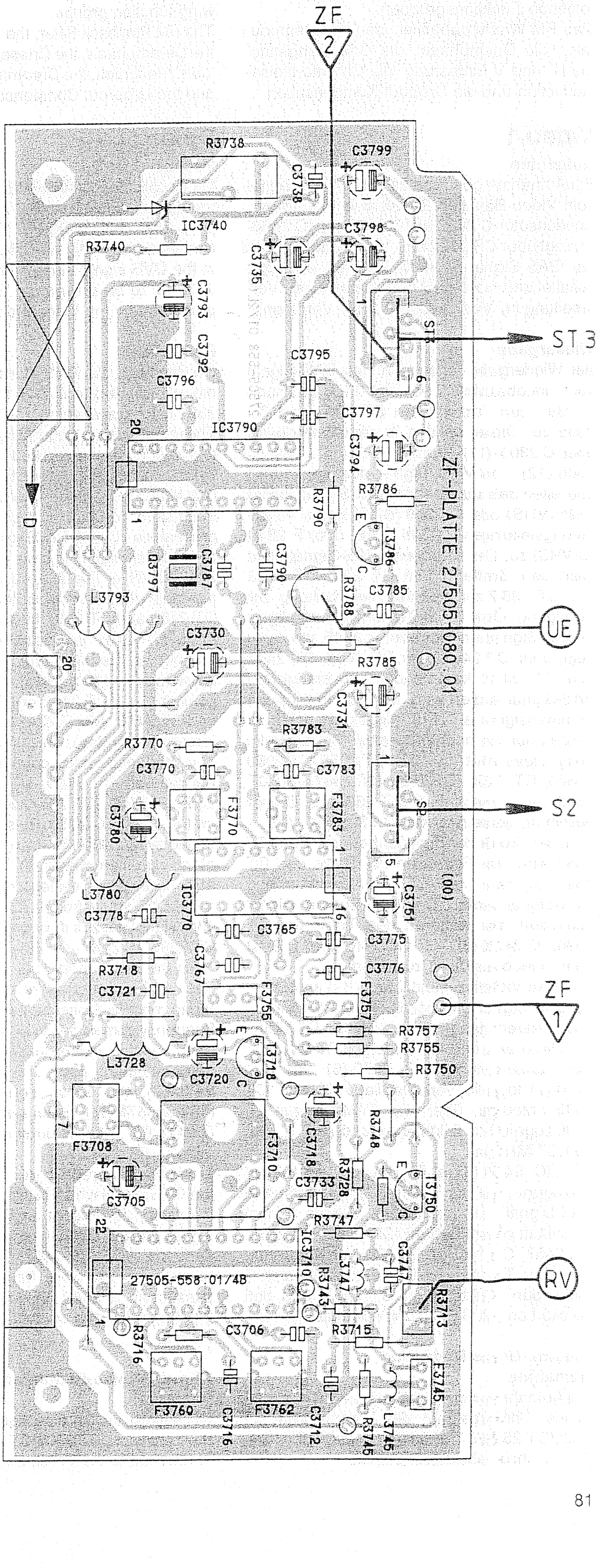

AUDIO IN OUT
ST3
CHROMA III
S2
ZF
MP1
ZF-VERSTAERKER IF AMPLIFIER 27505-080 01 (BESTUECKUNGS-SEITE/ COMPONENTSIDE)
CHASSISPLATTE I/ CHASSISBOARD I
R3713
RV

# ZF-Verstärker
# IF Amplifier
# Amplificatore FI

# ZF-Verstärker / IF Amplifier / Amplificatore FI

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes

S 2 - Chroma / Croma
ST 3 - Tonbaustein / Sound module / Modulo audio


ZF 2
ST 3
S2
UE
ZF 1
RV
D
ZF-PLATTE 27505-080.01
(00)
27505-558.01/4B
R3738
C3738
C3799
C3798
IC3740
R3740
C3735
C3793
C3792
C3796
C3795
C3797
C3794
IC3790
R3790
R3786
T3786
C3790
C3787
D3797
R3788
C3785
L3793
C3730
R3785
C3731
R3770
R3783
C3770
C3783
C3780
F3770
F3783
L3780
IC3770
C3751
C3778
C3765
C3775
C3776
C3767
R3718
C3721
F3755
F3757
R3757
R3755
R3750
L3728
C3720
T3718
F3708
F3710
C3718
R3748
R3728
C3733
T3750
C3705
R3747
IC3710
L3747
C3747
R3743
R3713
R3715
R3716
C3706
F3745
F3760
F3762
C3716
C3712
L3745
R3745
ST3
S2
1
6
5
20
16
22
7

# D Video

**Funktionsübersicht**

Die Video-Bausteine Video 1, Video 2 und Video 3 übernehmen bei Aufnahme die Verstärkung und Regelung des BAS-Signals und enthalten die Preemphasis, den FM-Modulator und die FM-Aufsprechendstufe.

Für die Wiedergabe enthalten die Bausteine folgende Funktionsgruppen:

Das FM-Wiedergabefilter, den FM-Demodulator, die Deemphasis, die Crispeningstufe, die H- und V-Eintastung, die Chroma-Noise-Reduction und die Dropout-Kompensation.

## Video 1

**Aufnahme**

Bei Aufnahme gelangt das FBAS/BAS-Signal vom Video-Baustein 2 über S 8-11 und den Kondensator C 2432 an IC 2430-(1). IC 2430-(2) liegt über CR 2422 an +12 $V_A$. Dadurch wird das BAS-Signal nach IC 2430-(8) durchgeschaltet und steht an S 8-10 zur weiteren Verarbeitung im Videobaustein 2 zur Verfügung.

**Wiedergabe**

Bei Wiedergabe leitet man das BAS-Signal vom Videobaustein 2 über S 8-11, C 2335 und C 2391 den Transistoren CT 2340 und CT 2395 zu. Diese werden je nach Betriebsart über IC 2305-(11) – bei S-VHS: High –, oder IC 2305-(12) – bei VHS: High –, durchgeschaltet und leiten das anstehende BAS-Signal über R 2395 (VHS) oder R 2340 (S-VHS) den Verzögerungsleitungen F 2395 (VHS) oder F 2340 (S-VHS) zu. Das verzögerte BAS-Signal steht nach den Emitterfolgern CT 2342/CT 2400 und CT 2387 zur weiteren Verarbeitung zur Verfügung. Über CT 2401 steht das verzögerte BAS-Signal am Einsteller R 2345, wo es zu dem, über CT 2402 oder CT 2405, CT 2407 und CT 2410 kommenden, unverzögerten BAS-Signal addiert wird. Mit R 2345 wird das Summensignal auf Null eingestellt, d.h., es bleiben nur die hochfrequenten Signalanteile übrig. Diese führt man über CT 2350, CT 2363 (VHS), CT 2355 (S-VHS), CT 2357 und CT 2366 dem Umschalter CIC 2380 zu. Dieser bestimmt, gesteuert von IC 2305-(6), -(13), -(14), die Größe der Signalanhebung. Über CT 2385 wird das Signal an der Basis des CT 2390 zu dem über CT 2387 anstehenden BAS-Signal addiert. Das BAS-Summensignal durchläuft des weiteren den Transistor CT 2390, IC 2430-(6), -(8) und wird über S 8-10 dem Videobaustein 2 zugeführt.

Das vom Videobaustein 2 an S 8-8 anstehende BAS-Signal gelangt über die Verstärker- und Frequenzgangkorrektur-Stufen CT 2435 / CT 2440 und den Emitterfolger CT 2445 an die Laufzeitleitung CIC 2470-(6). An CIC 2470-(7) liegt die, vom Oszillator Q 2475 / CT 2485 erzeugte, über den Emitterfolger CT 2490 zugeführte Taktfrequenz von 3 x $f_{sc}$ (13, 300857 MHz) an.

An CIC 2470-(4) steht das um eine Zeile verzögerte, mit der Taktfrequenz überlagerte BAS-Signal zur Verfügung. Dieses Signal durchläuft einen Tiefpaß (CC 2455, CL 2455, CC 2457, CL 2457, CC 2458) zur Unterdrükkung der Taktfrequenz und gelangt über R 2460, den Emitterfolger CT 2460 und den Steckerkontakt S 8-7 zum Videobaustein 2.

**Chroma-Noise-Reduction**

**Aufnahme**

Bei Aufnahme durchläuft das an S 4-4 anstehende Chromasignal die Transistoren CT 2505/CT 2555/CT 2560 und gelangt über S 4-3 zum Chromabaustein zurück.

# GB Video

**Functional Overview**

On Record the Video Modules Video 1, Video 2 and Video 3 carry out the amplification and control of the CVS signal gain and contains the Pre-emphasis, the FM Modulator and the FM Record Output Stage.

For Playback, these modules contain the following function groups:

The FM Playback Filter, the FM Demodulator, the De-emphasis, the Crispening stage, the H- and V-Insertion, the Chroma Noise Reduction and the Drop-out Compensation.

## Video 1

**Record**

On Record, the CCVS/CVS signal is fed from the Video module 2 via S 8-11 and the capacitor C 2432 to IC 2430-(1). The IC 2430-(2) is connected to +12$V_A$ via CR 2422. This results in the CVS signal being switched through IC 2430-(8) to be present on S 8-10 for further processing in the Video module 2.

**Playback**

On Playback, the CVS signal from the Video module 2 is fed from S 8-11, C 2335 and C 2391 to the transistors CT 2340 and CT 2395. These transistors, depending upon the operating mode, are controlled by IC 2305-(11) which is at a High Level on S-VHS, or IC 2305-(12) which is at a High Level on VHS. These transistors conduct and connect the signal present via R 2395 (VHS) or R 2340 (S-VHS) to the delay matching lines F 2395 (VHS) or F 2340 (S-VHS). The delayed CVS signal is then available after the emitter followers CT 2342/ CT 2400 and CT 2387 for further processing. From CT 2401 the delayed CVS signal is present at the adjustment preset R 2345, which is added to the non-delayed CVS signal coming in via CT 2402 or CT 2405, CT 2407 and CT 2410. With R 2345 the Summed signal is adjusted for Zero, which means that only the high frequency components remain. This is fed through CT 2359, CT 2363 (VHS), CT 2355 (S-VHS), CT 2357 and CT 2366 to the switch-over CIC 2380. This determines, controlled by IC 2305-(6), -(13), -(14), the amount of the signal emphasis. At CT 2390 the signal at the base of the transistor CT 2390 is added to the CVS signal from CT 2387. The Summed CVS signal passes through a further transistor CT 2390, IC 2340-(6), -(8) and is fed from S 8-10 to the Video module 2.

The CVS signal present on S 8-8 from the Video module 2 passes through an amplifier, frequency correction circuit stage CT 2435/CT 2440 and the emitter follower CT 2445 to the delay matching path CIC 2470-(6). On CIC 2470-(7), the Clock frequency of 3 x $f_{sc}$ (13.300857MHz), generated by the oscillator Q 2475/CT 2485, is present from the emitter follower CT 2490.

A one line delayed signal, superimposed with the CVS signal which is triggered by the Clock frequency, is present on CIC 2470-(4). This signal passes through a low pass filter (CC 2455, CL 2455, CC 2457, CL 2457, CC 2458) to suppress the clock frequency and it then passes via R 2460, the emitter follower CT 2460 and the plug contact S 8-7 to the Video module 2.

**Chroma-Noise-Reduction**

**Record**

On Record, the Chroma signal passes through the transistors CT 2505/CT 2555/CT 2560 and is returned to the Chroma module from S 4-3.

# I Video

**Prospetto delle funzioni**

I moduli video 1, 2 e 3 provvedono in registrazione all'amplificazione e alla regolazione del segnale BAS e comprendono la preenfasi, il modulatore FM e lo stadio registrazione FM.

Per la riproduzione sono invece composti dai seguenti gruppi di funzioni:

filtro di riproduzione FM, demodulatore FM, deenfasi, stadio crispening (che migliora la definizione dell'immagine), circuito di introduzione di segnali H e V, circuito Noise Reduction croma e compensatore di dropout.

## Video 1

**Registrazione**

In registrazione, il segnale FBAS/BAS fornito dal modulo video 2 viene trasferito in IC 2430-(1) attraverso S 8-11 ed il condensatore C 2432. Il pin 2 di IC 2430 è a +12 $V_A$ tramite CR 2422. Per questo il segnale BAS viene inoltrato a IC 2430-(8) ed è disponibile su S 8-10 per l'ulteriore elaborazione nel modulo video2.

**Riproduzione**

In riproduzione, il segnale BAS che proviene dal modulo video 2 viene condotto verso S 8-11, C 2335 e C 2391 ai transistor CT 2340 e CT 2395. Questi vengono attivati a seconda del funzionamento scelto tramite IC 2305-(11) – con S-VHS: High – opp. IC 2305-(12) – con VHS: High – ed applicano il segnale BAS presente alle linee di ritardo F 2395 (VHS) o F 2340 (S-VHS) atraverso R 2395 (VHS) o R 2340 (S-VHS). Il segnale BAS ritardato, successivamente agli inseguitori d'emettitore CT 2342/CT 2400 e CT 2387, è disponibile per l'ulteriore elaborazione. Tramite CT 2401, il segnale BAS ritardato si trova sul regolatore R 2345 dove viene aggiunto al segnale BAS non ritadato proveniente da CT 2402 o CT 2405, CT 2407 e CT 2410. Con R 2345 viene portato a zero il segnale somma, cioè si conserva solo il contenuto ad alta frequenza che, attraverso CT 2350, CT 2363 (VHS), CT 2355 (S-VHS), CT 2357 e CT 2366 giunge al commutatore CIC 2380. Questo determina, per mezzo di IC 2305-(6), -(13), -(14), l'entità dell'esaltazione del segnale. Tramite CT 2385, questo segnale viene sommato a quello BAS disponibile alla base di CT 2390 per mezzo di CT 2387. Il segnale somma BAS percorre anche il transistor CT 2390, IC 2430-(6), -(8) ed, attraverso S 8-10, perviene al modulo video 2.

Il segnale BAS inviato ad S 8-8 dal modulo video 2, giunge alla linea del tempo di transito CIC 2470-(6) mediante gli stadi correttori dell'amplificazione e della risposta in frequenza CT 2435 / CT 2440 e gli inseguitori d'emettitore CT 2445. In CIC 2470-(7) è presente la frequenza di cadenza da 3 x $f_{sc}$ (13, 300857 MHz) generata dall'oscillatore Q 2475 / CT 2485 ed inviata per mezzo dell'inseguitore d'emettitore CT 2490.

Al pin 4 di questo IC è applicato il segnale BAS ritardato di una riga e combinato con la frequenza di cadenza. Questo segnale attraversa un passabasso (CC 2455, CL 2455, CC 2457, CL 2457, CC 2458) per la soppressione della frequenza di cadenza ed arriva al modulo video 2 scorrendo lungo l'inseguitore CT 2460 ed il contatto S 8-7 del connettore.

**Riduzione del fruscio cromatico**

**Registrazione**

In registrazione, il segnale croma presente su S 4-4 percorre i transistor CT 2505/CT 2555/ CT 2560 e quindi ritorna al modulo croma attraverso S 4-3.

### Wiedergabe

Bei Wiedergabe führt man das Chromasignal über S 4-4 und CT 2505 der Chroma-Noise-Reduction zu. Diese besteht aus VL 2508, VL 2510, CT 2515, CT 2530, CT 2535, CT 2545, L 2508, L 2512 und L 2537. Über CT 2550 ist diese Stufe ein- bzw. ausschaltbar. Die Steuerung erfolgt durch IC 2305-(5). Nachdem das Chromasignal diese Stufe durchlaufen hat, gelangt es von CT 2550 über CT 2555, CT 2560 und S 4-3 zurück zum Chromabaustein.

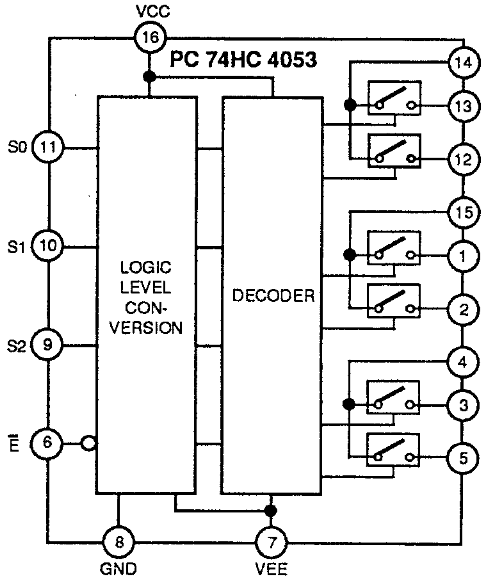
### Playback

On Playback, the Chroma signal is fed to the Chroma Noise Reduction circuit from S 4-4 and CT 2505. This consists of VL 2508, VL 2510, CT 2515, CT 2530, CT 2535, CT 2545, L 2508, L 2512 and L 2537. From CT 2550 this stage can be switched on or off. The control is from IC 2305-(5). After the Chroma signal has passed through this stage, it is fed from CT 2550 and through CT 2555 and CT 2560 to be returned via S 4-3 to the Chroma module.

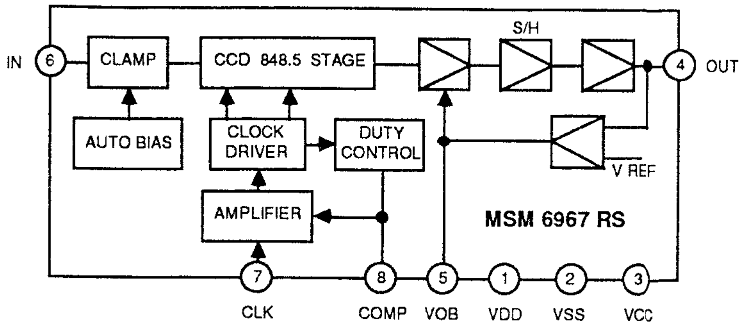
### Riproduzione

In riproduzione si conduce il segnale croma al circuito Noise-Reduction croma mediante S 4-4 e CT 2505. Esso è costituito da VL 2508, VL 2510, CT 2515, CT 2530, CT 2535, CT 2545, L 2508, L 2512 e L 2537. CT 2550 ha il compito di accendere e spegnere questo stadio. Il pilotaggio avviene tramite IC 2305-(5). Dopo questo stadio, il segnale croma ritorna da CT 2550 al modulo croma attraverso CT 2555, CT 2560 e S 4-3.

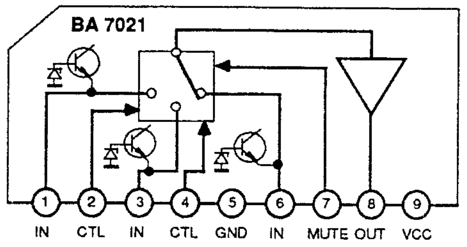
### PC 74 HC4053 (CIC 2380)


VCC
16
PC 74HC 4053
S0 11
S1 10
S2 9
E 6
LOGIC LEVEL CON-VERSION
DECODER
14
13
12
15
1
2
4
3
5
8
GND
7
VEE

### MSM 6967 (CIC 2470)


IN 6
CLAMP
CCD 848.5 STAGE
S/H
4 OUT
AUTO BIAS
CLOCK DRIVER
DUTY CONTROL
V REF
AMPLIFIER
MSM 6967 RS
7
CLK
8
COMP
5
VOB
1
VDD
2
VSS
3
VCC

### BA 7021 (IC 2430)


BA 7021
1
IN
2
CTL
3
IN
4
CTL
5
GND
6
IN
7
MUTE
8
OUT
9
VCC

## D Abgleich (Video 1)

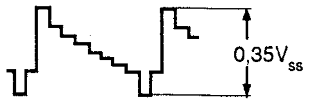
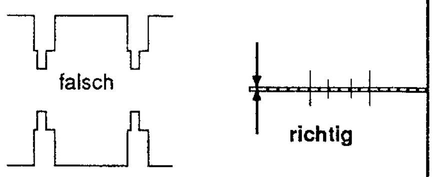
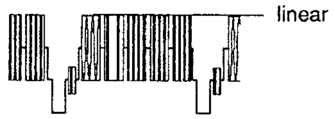
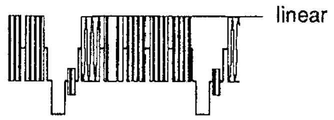
**Meßgeräte :**
Oszilloskop, Tastkopf 10 : 1, Frequenzzähler, Farbgenerator
**Servicearbeiten nach Bausteinwechsel:–**

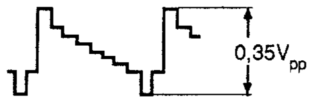
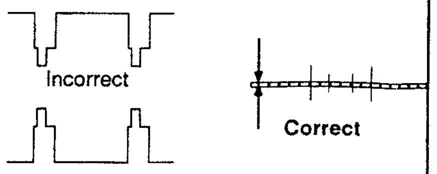
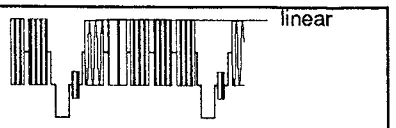
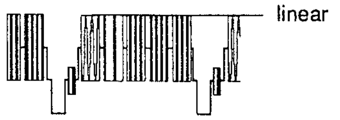
## GB Adjustment (Video 1)

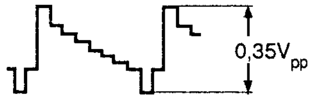
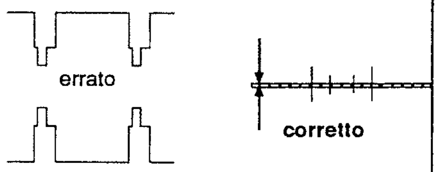
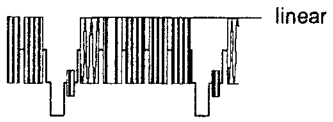
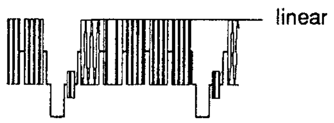
**Test equipment:**
Oscilloscope, 10 : 1 probe, frequency counter, colour generator
**Servicing work after changing board: –**

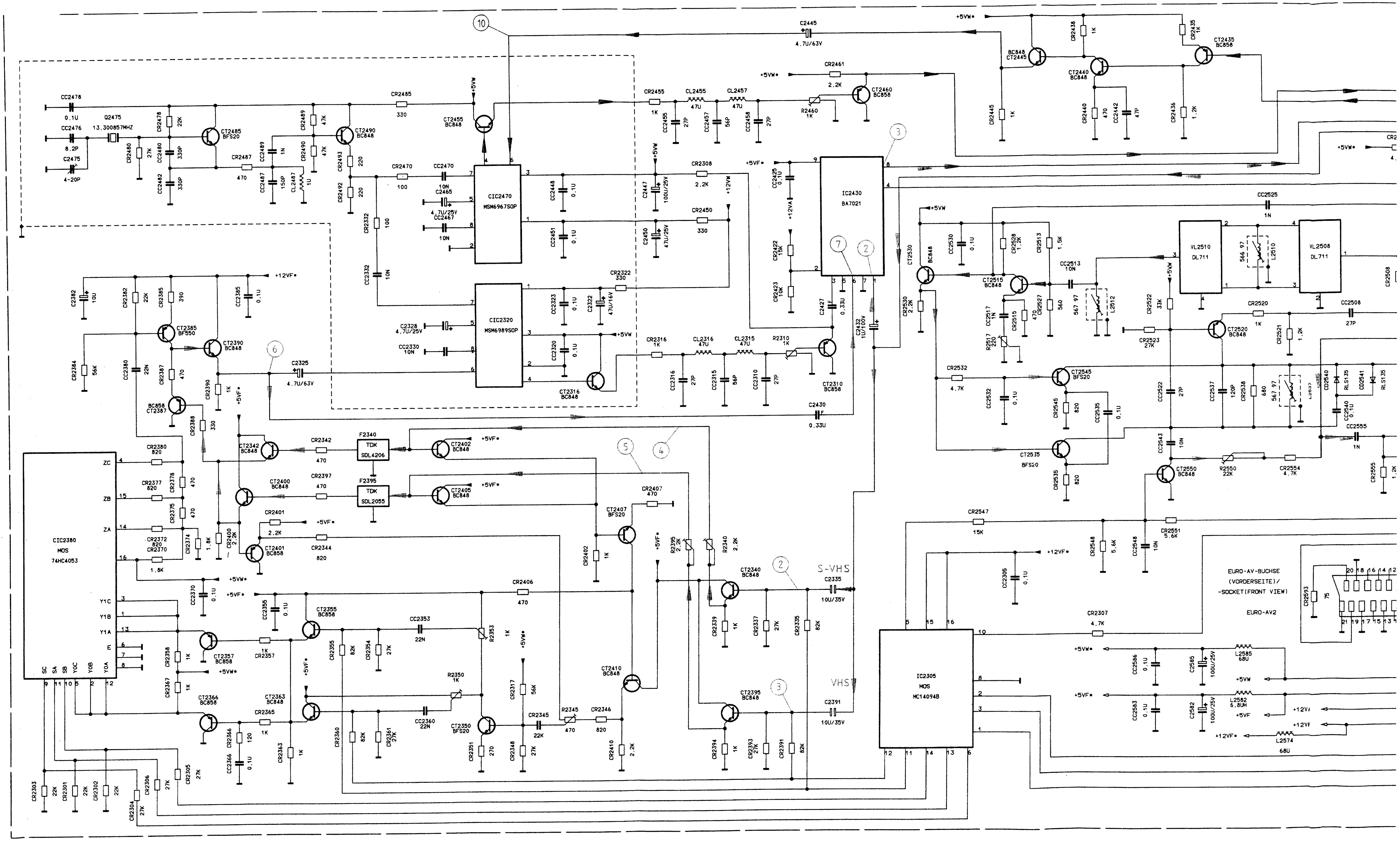
## I Taratura (Video 1)

**Strumenti :**
Oscilloscopio, sonda 10 : 1, frequenzimetro, generatore colore
**Lavori da eseguire dopo la sostituzione del modulo: –**

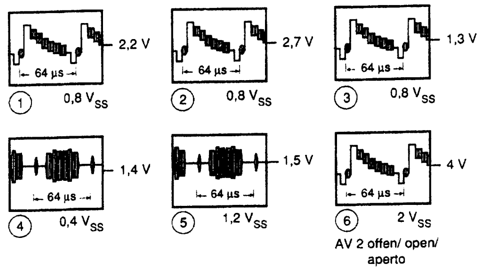
| D Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. Amplitude A des BAS-Signals | Oszilloskop:<br>Kontakt S 8-7<br>Trigger: S 7-6 | Grautestbild wiedergeben | R 2460 |  |
| 2. Amplitude B des BAS-Signals | Oszilloskop:<br>S 8-10<br>Trigger: S 7-6 | Grautestbild wiedergeben | R 2310 | a.) Kontakt S 4-1 an +5V legen und Signalamplitude an Kontakt S 8-10 messen.<br>b.) Kontakt S 4-1 an Masse legen. Mit R 2310 Signalamplitude auf den unter Punkt a.) gemessenen Wert einstellen. Masseverbindung auftrennen. |
| 3. Nullabgleich | Oszilloskop:<br>Kollektor CT 2350<br>Trigger: S 7-6 | Weißtestbild wiedergeben | R 2345 |  |
| 4. Linearität (S-VHS) | Multiburstsignal einspeisen.<br>Oszilloskop:<br>CR 2400<br>Trigger: S 7-6 | S-VHS-Aufnahme | R 2340 |  |
| 5. Linearität (VHS) | Multiburstsignal einspeisen.<br>Oszilloskop:<br>CR 2400<br>Trigger: S 7-6 | VHS-Aufnahme | R 2395 |  |
| 6. Taktfrequenz für Verzögerungsleitung | Frequenzzähler:<br>Emitter CT 2490 | Wiedergabe | C 2475 | Frequenz auf 13,300857 MHz einstellen. |

| GB Adjustment | Preparation | Cassette Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. Amplitude A of the CVS signal | Oscilloscope:<br>Contact S 8-7<br>Trigger: S 7-6 | Playback a grey bar test pattern | R 2460 |  |
| 2. Amplitude B of the CVS signal | Oscilloscope:<br>S 8-10<br>Trigger: S 7-6 | Playback a grey bar test pattern | R 2310 | a.) Connect contact S 4-1 to +5V and measure the amplitude of the signal at S 8-10.<br>b.) Connect contact S 4-1 to chassis. Adjust the amplitude of the signal to the same value measured at a.) with R 2310 . Disconnect the connection to chassis. |
| 3. Zero adjustment | Oscilloscope:<br>Collector CT 2350<br>Trigger: S 7-6 | Playback a white test pattern | R 2345 |  |
| 4. Linearität (S-VHS) | Feed in a colour bar test pattern.<br>Oscilloscope:<br>CR 2400<br>Trigger: S 7-6 | S-VHS Record | R 2340 |  |
| 5. Linearity (VHS) | Feed in a multiburst test pattern.<br>Oscilloscope:<br>CR 2400<br>Trigger: S 7-6 | VHS-Record | R 2395 |  |
| 6. Clock frequency for delay line | Frequency counter:<br>Emitter CT 2490 | Playback | C 2475 | Set the frequency to 13,300857 MHz. |

| I Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Ampiezza A del segnale BAS | Oscilloscopio:<br>Contatto S 8-7<br>Trigger: S 7-6 | Riprodurre il monoscopio del barre grigio | R 2460 |  |
| 2. Ampiezza B del segnale BAS | Oscilloscopio:<br>Contatto S 8-10<br>Trigger: S 7-6 | Riprodurre il monoscopio del barre grigio | R 2310 | a.) Porre il contatto S 4-1 a +5V e misurare l'ampiezza del segnale al contatto S 8-10.<br>b.) Porre il contatto S 4-1 a massa. Con R 2310 regolare l'ampiezza del segnale sul valore misurato precedentemente (punto a). Togliere il collegamento di massa. |
| 3. Taratura dello zero | Oscilloscopio:<br>Coll. CT 2350<br>Trigger: S 7-6 | Riprodurre il monoscopio del bianco. | R 2345 |  |
| 4. Linearitá (S-VHS) | Applicare il monoscopio a multiburst.<br>Oscilloscopio:<br>CR 2400<br>Trigger: S 7-6 | Registrazione S-VHS | R 2340 |  |
| 5. Linearitá (VHS) | Applicare il monoscopio a multiburst.<br>Oscilloscopio:<br>CR 2400<br>Trigger: S 7-6 | Registrazione VHS | R 2395 |  |
| 6. Frequenza clock per linea di ritardo | Frequenzimetro:<br>Emitter CT 2490 | Riproduzione | C 2475 | Regolare la frequenza 13,300857 MHz. |

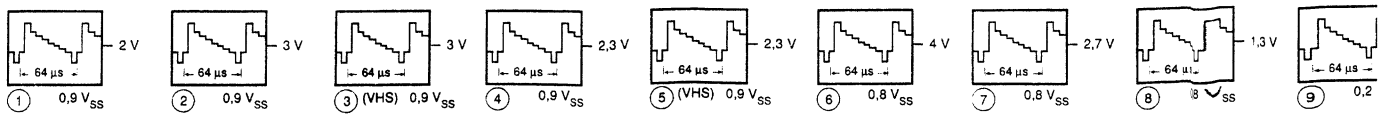

CIC2470
MSM6967SOP
CIC2320
MSM6989SOP
IC2430
BA7021
CIC2380
MOS
74HC4053
IC2305
MOS
MC14094B
VL2510
DL711
VL2508
DL711
F2340
TDK
SDL4206
F2395
TDK
SDL2055
Q2475
13.300857MHZ
CT2485
BFS20
CT2490
BC848
CT2455
BC848
CT2460
BC858
CT2445
BC848
CT2440
BC848
CT2435
BC858
CT2385
BF550
CT2390
BC848
CT2387
BC858
CT2342
BC848
CT2400
BC848
CT2401
BC858
CT2402
BC848
CT2405
BC848
CT2407
BFS20
CT2410
BC848
CT2316
BC848
CT2310
BC858
CT2355
BC858
CT2357
BC858
CT2363
BC848
CT2366
BC858
CT2350
BFS20
CT2340
BC848
CT2395
BC848
CT2515
BC848
CT2520
BC848
CT2545
BFS20
CT2535
BFS20
CT2550
BC848
S-VHS
VHS
+5VW•
+5VF•
+12VF•
+12VA
EURO-AV-BUCHSE
(VORDERSEITE)/
-SOCKET(FRONT VIEW)
EURO-AV2
ZC
ZB
ZA
Y1C
Y1B
Y1A
E
SC
SA
SB
YOC
YOB
YOA

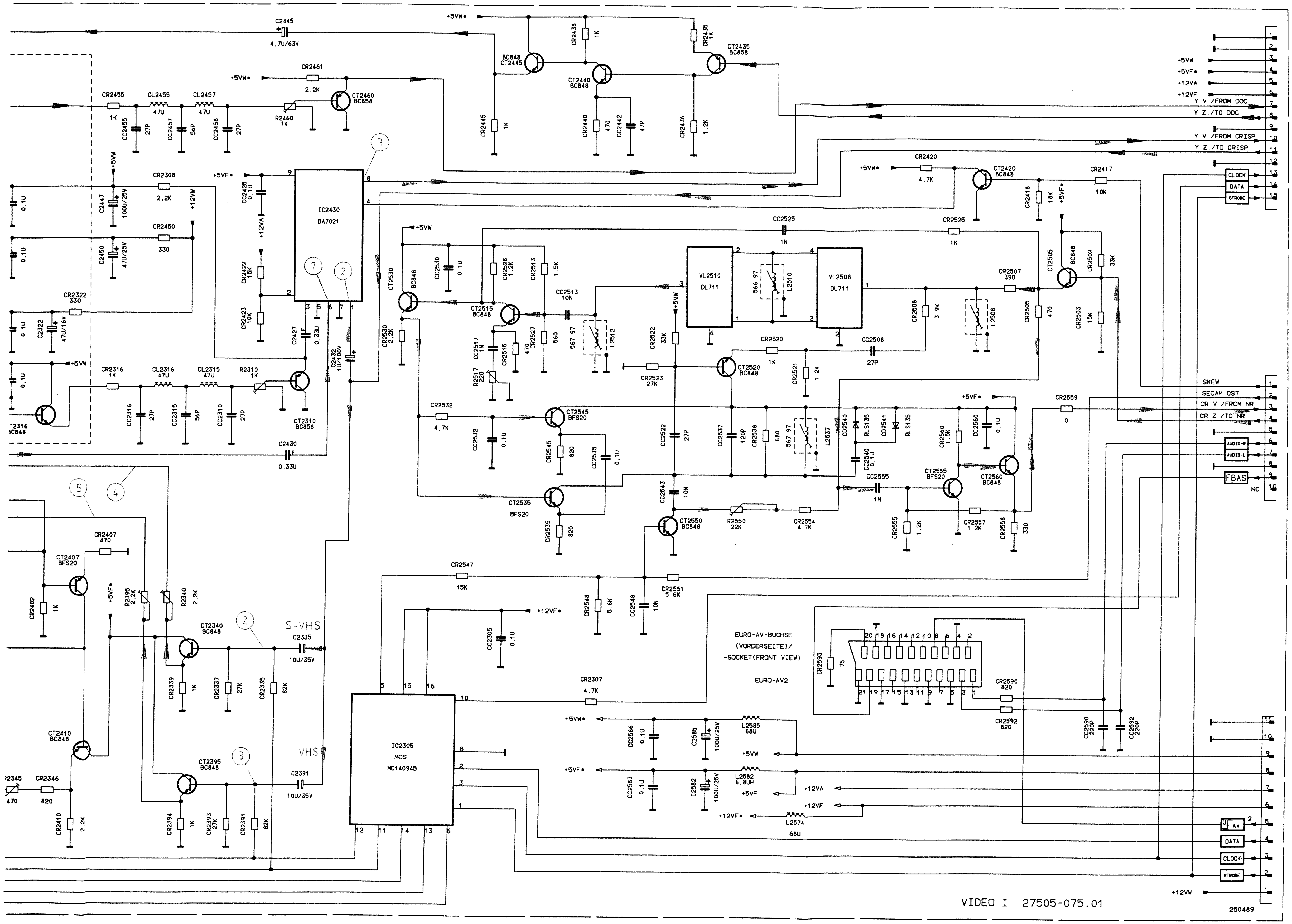
Aufnahme (S-VHS / NP) - HF
Record (S-VHS / NP) - RF
Registrazione (S-VHS / NP) - AF



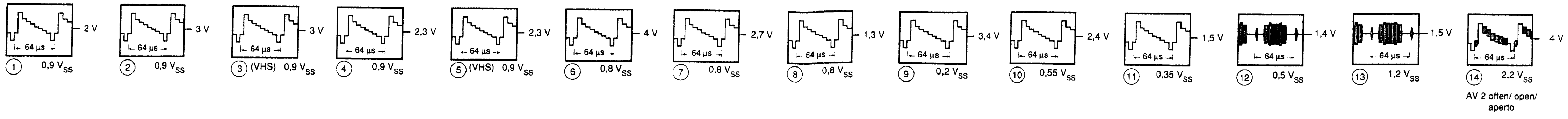
AV 2 offen/ open/ aperto

Wiedergabe (S-VHS / NP)
Playback (S-VHS / NP)
Riproduzione (S-VHS / NP)




VIDEO I 27505-075.01
250489
IC2430 BA7021
IC2305 MOS MC14094B
VL2510 DL711
VL2508 DL711
EURO-AV-BUCHSE (VORDERSEITE)/ -SOCKET(FRONT VIEW)
EURO-AV2
S-VHS
VHS
S8
VIDEO II
S4
CHROMA III
S5
+5VW
+5VF
+12VA
+12VF
+12VW
Y V /FROM DOC
Y Z /TO DOC
Y V /FROM CRISP
Y Z /TO CRISP
CLOCK
DATA
STROBE
SKEW
SECAM OST
CR V /FROM NR
CR Z /TO NR
AUDIO-R
AUDIO-L
FBAS
NC
U AV
C2445 4,7U/63V
CR2461 2,2K
CT2460 BC858
R2460 1K
CR2455 1K
CL2455 47U
CL2457 47U
CC2455 27P
CC2457 56P
CC2458 27P
BC848 CT2445
CR2438 1K
CT2440 BC848
CR2440 470
CC2442 47P
CR2435 1K
CT2435 BC858
CR2436 1,2K
CR2445 1K
CR2308 2,2K
CR2450 330
C2447 100U/25V
C2450 47U/25V
CR2322 330
C2322 47U/16V
CC2425 0,1U
CR2422 15K
CR2423 10K
C2427 0,33U
C2432 1U/100V
CR2316 1K
CL2316 47U
CL2315 47U
R2310 1K
CC2316 27P
CC2315 56P
CC2310 27P
CT2310 BC858
CT2316 BC848
C2430 0,33U
CR2420 4,7K
CT2420 BC848
CR2417 10K
CR2418 18K
CC2525 1N
CR2525 1K
CT2530 BC848
CC2530 0,1U
CR2528 1,2K
CR2513 1,5K
CT2515 BC848
CC2513 10N
L2512 567 97
CC2517 1N
R2517 220
CR2515 560
CR2527 470
CR2530 2,2K
CR2522 33K
L2510 566 97
CR2507 390
CT2505 BC848
CR2502 33K
CR2503 15K
CR2505 470
CR2508 3,9K
L2508
CR2520 1K
CC2508 27P
CT2520 BC848
CR2521 1,2K
CR2523 27K
CR2532 4,7K
CC2532 0,1U
CT2545 BFS20
CR2545 820
CC2535 0,1U
CT2535 BFS20
CR2535 820
CC2522 27P
CC2537 120P
CR2538 680
L2537 567 97
CD2540 RLS135
CD2541 RLS135
CC2540 0,1U
CR2560 1,5K
CC2560 0,1U
CT2555 BFS20
CT2560 BC848
CR2559 0
CC2555 1N
CR2555 1,2K
CR2557 1,2K
CR2558 330
CC2543 10N
CT2550 BC848
R2550 22K
CR2554 4,7K
CR2547 15K
CR2548 5,6K
CC2548 10N
CR2551 5,6K
CC2305 0,1U
CR2307 4,7K
CR2593 75
CR2590 820
CR2592 820
CC2590 220P
CC2592 220P
CC2586 0,1U
C2585 100U/25V
L2585 68U
CC2583 0,1U
C2582 100U/25V
L2582 6,8UH
L2574 68U
CR2407 470
CT2407 BFS20
CR2402 1K
R2395 2,2K
R2340 2,2K
CT2340 BC848
C2335 10U/35V
CR2339 1K
CR2337 27K
CR2335 82K
CT2410 BC848
CR2346 820
CR2410 2,2K
CT2395 BC848
C2391 10U/35V
CR2394 1K
CR2393 27K
CR2391 82K
470

Wiedergabe (S-VHS / NP)
Playback (S-VHS / NP)
Riproduzione (S-VHS / NP)

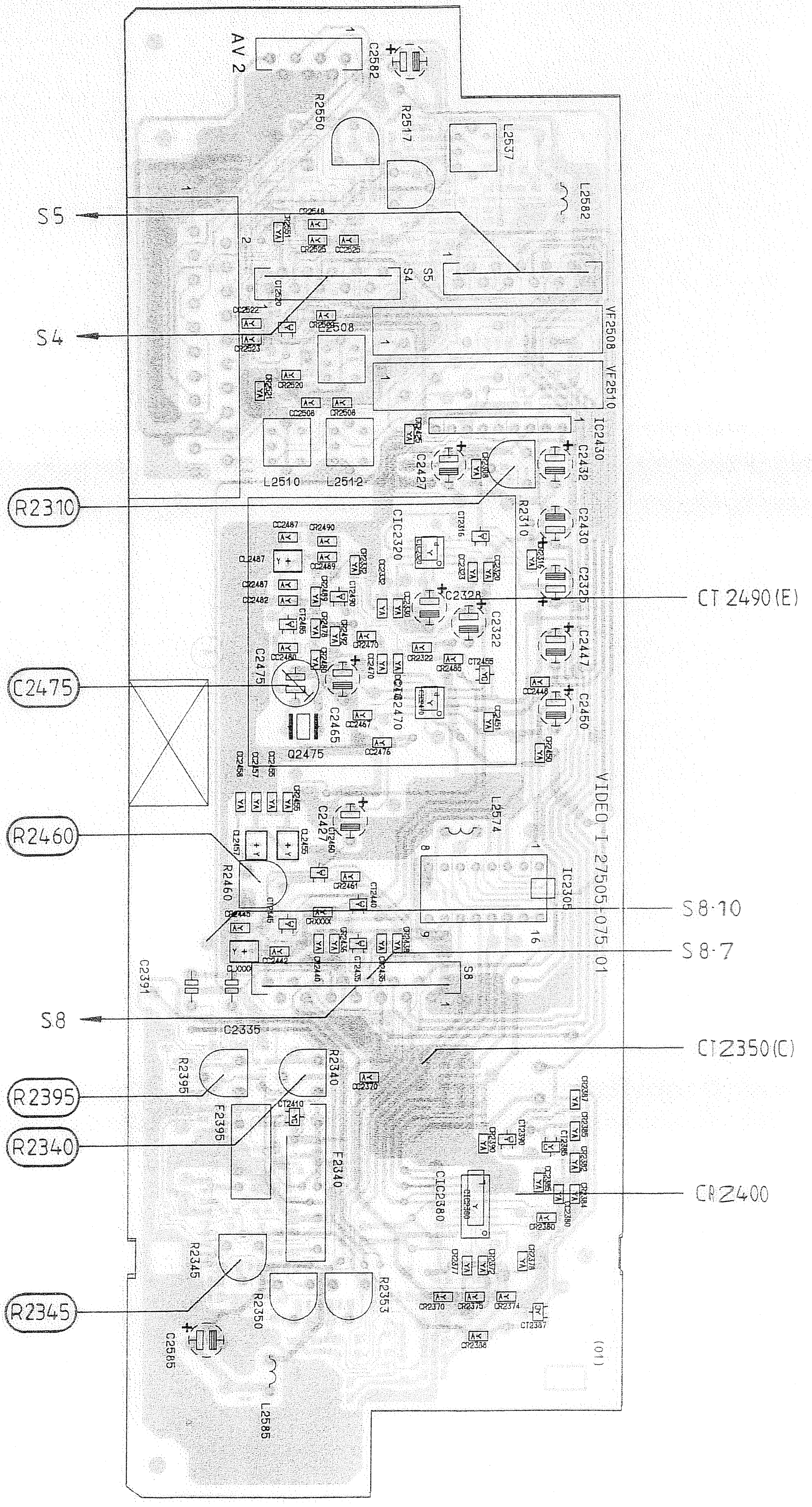


AV 2 offen/ open/ aperto

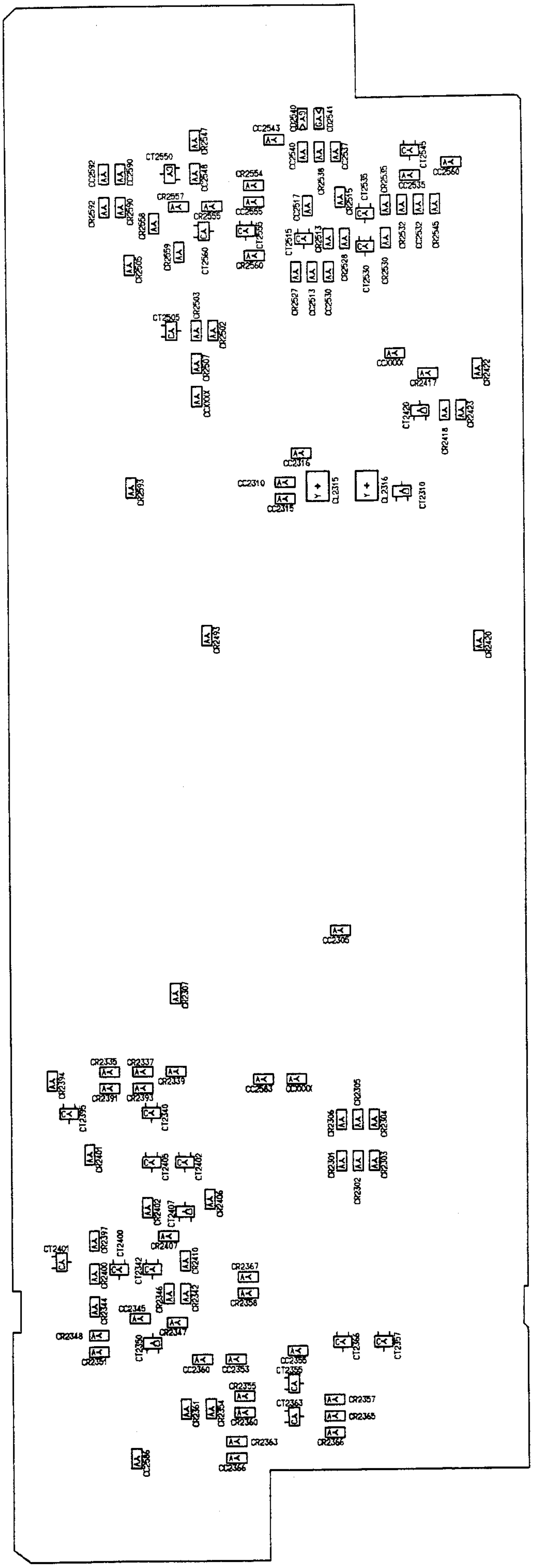
Video 1

# Video 1

S 4 - Chroma / Croma
S 5 - Chroma / Croma
S 8 - Video 2


S5
S4
R2310
C2475
R2460
S8
R2395
R2340
R2345
CT 2490 (E)
S8·10
S8·7
CT2350(C)
CR2400
AV 2
VIDEO I 27505 075 01
IC2430
IC2305
Q2475
CIC2320
CIC2380
VF2508
VF2510
L2510
L2512
L2537
L2582
L2574
L2585
C2582
C2585
C2335
C2391
F2395
F2340
R2550
R2517
R2353
R2350

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



## D Video 2

**1. Aufnahme**

Bei Aufnahme gelangt das FBAS-Signal vom Chromabaustein über S 6-9 und Pin 46 ins CIC 2850, wo es eine automatische Verstärkungsregelung (AGC) durchläuft. Danach teilt sich der Signalweg für die Aufnahme und den EE-Betrieb.

- Aufnahme-Signalweg

Das FBAS-Signal verläßt an Pin 48 das CIC 2850 und durchläuft abhängig von der Betriebsart einen der 3 folgenden Schaltungszweige:

a.) Betriebsart **S-VHS** -HF/AV/CV-NP, LP - aktiviert durch Schieberegister IC 2805-(6)

Von CIC 2850-(48) durchläuft das FBAS-Signal die Transistoren CT 2820, CT 2819 und CT 2815. Im anschließenden Tiefpass (F 2810) mit Farbträgersperre (4,43MHz) filtert man den Chromaanteil aus und führt das BAS-Signal über CT 2810, C 2807, CD 2807 und C 2847 dem CIC 2850-(2) zu. Zwischen CIC 2850-(2) und CIC 2850-(7) durchläuft das BAS-Signal einige Stufen, die bei Aufnahme ohne Bedeutung sind. Von Pin 7 über Pin 9 führt man das BAS-Signal der Synchronabtrennstufe im CIC 2850 zu. An Pin 44 verläßt das geklemmte und geregelte Synchrongemisch das CIC 2850 und gelangt zum einen über CT 2765 und S 6-1 zum Chromabaustein. Zum anderen gewinnt man in einer Filterstufe (CR 2785, CC 2785, CR 2783, CC 2782, CR 2782, CT 2780, CT 2777) den Bildimpuls, den man über S 7-9 dem Chromabaustein und von dort über A 2-7 der Ablaufsteuerung II zuführt.

Außerdem gelangt das ausgeregelte BAS-Signal von CIC 2850-(7) über einen Umschalter IC 2900-(6), -(8) und die Verzögerungsleitung F 2910 zum Betriebsartenschalter CIC 2915-(8). An Pin 6 verläßt das BAS-Signal das CIC 2915, wird diesem über C 2922 und Pin 11 wieder zugeführt und gelangt über Pin 5 zu einer NLE-Stufe für S-VHS –CIC 2950-(1). Sie bewirkt eine nichtlineare, d.h. frequenz- und amplitudenabhängige Anhebung (SUB EMPHASIS) des BAS-Signals, was zu einer Verbesserung des Bildeindrucks führt. Da diese Anhebung bei S-VHS-NP und S-VHS-LP unterschiedlich wirken muß, wird vom Schieberegister IC 2805, über den seriellen Bus gesteuert, an dessen Pin 14 bei LP ein High-Pegel (bei NP Low) ausgegeben, der über CT 2973 den Pin 5 des CIC 2950 an Masse legt.

Bei VHS-Aufnahmebetrieb hingegen steht an Schieberegister IC 2805-(11) ein High-Pegel, der über CT 2965 den Pin 7 des CIC 2950 an Masse legt und so die Anhebung abschaltet.

Die Rückführung des BAS-Signals zum CIC 2850-(10) erfolgt über CIC 2950-(9) und CC 2858.

**b.) Betriebsart VHS**

Bei der Betriebsart VHS-Aufnahme über alle möglichen Signaleingänge wird folgender Signalweg vom Schieberegister IC 2805-(7) durch einen High-Pegel aktiviert. Das an CIC 2850-(48) anstehende FBAS-Signal durchläuft den 3MHz-Tiefpass F 2835, wo der Chromaanteil abgesenkt wird. Das BAS-Signal erreicht über CT 2837, CD 2840, C 2847 und CIC 2850-(2) den unter a.) beschriebenen Signalweg, der bei S-VHS- und VHS-Betrieb bis auf die NLE-Stufe (CIC 2950) identisch ist. Diese ist bei VHS-Aufnahme abgeschaltet. Von CIC 2950-(9) führt man das BAS-Signal zum einen direkt dem CIC 2850-(10) zu, und zum anderen über CD 2859, wo die nichtlineare Anhebung erfolgt, deren Größe CC 2859 und CR 2860 bestimmen. Das Signal wird über CC 2860 und CIC 2850-(11) eingekoppelt

## GB Video 2

**1. Record**

On record the CCVS signal from the Chroma Module is fed from S 6-9 and Pin 46 into CIC 2850 in which it passes through an Automatic Gain Controlled amplifier (AGC). Thereafter the signal divides into a path for record and into a path for E to E operation.

- Record Signal Path

The CCVS signal leaves the CIC 2850 from Pin 48 and, depending upon the operating mode, passes through one of the following three signal paths.

a.) Operating Mode **S-VHS**-HF/AV/CV-NP, LP -activated by the Shift Register IC 2805-(6).

From CIC 2850-(48) the CCVS signal passes through the transistors CT 2820, CT 2819 and CT 2815. In the low pass filter (F 2810) with the colour carrier trap (4.43MHz), the chroma component is filtered off and the CVS signal is fed through CT 2810, C 2807, CD 2807 and C 2847 to the CIC 2850-(2). Between CIC 2850-(2) and CIC 2850-(7) the signal passes through a few circuits which are of no importance on record. From Pin 7 the CVS signal is fed to Pin 9 to the sync. separation stage in CIC 2850. The clamped and gain controlled composite sync leaves the CIC 2850 from Pin 44 and is fed in one path via CT 2785 and S 6-1 to the Chroma Module. In the other path, the field pulse is obtained after the signal has passed through a filter stage (CR 2785, CC 2785, CR 2783, CC 2782, CR 2782, CT 2780, CT 2777) which is fed via S 7-9 to the Chroma Module and then via A 2-7 to the Sequence Control II.

In addition the controlled CVS signal from CIC 2850-(7) is fed via a switch IC 2900-(6),-(8) and the delay line F 2910 to the operating mode switch CIC 2915-(8). The CVS signal leaves the CIC 2915 from Pin 6 and is fed back to Pin 11 through C 2922. This is then fed from Pin 5 to a NLE stage for S-VHS–CIC 2950-(1). This circuit operates as a non-linear, i.e. frequency, and amplitude dependant emphasis (SUB EMPHASIS) for the CVS signal which results in an improvement in the picture impression. As this emphasis must have different levels on S-VHS-NP and S-VHS-LP, the Shift Register IC 2805 is controlled by the serial Bus, so that Pin 14 receives a High Level on LP (on NP Low Level). This, via CT 2973, connects Pin 5 of the CIC 2950 to chassis.

On VHS record mode, however, a High Level is present on the Shift Register IC 2805-(11) and this connects Pin 7 of the CIC 2950 to chassis via CT 2965 so that the emphasis is switched off. The feed-back of the CVS signal to CIC 2850-(10) is carried out from CIC 2950-(9) and CC 2858.

b.) Operating Mode **VHS**

On this operating mode, all possible signal inputs are fed through the following path by the Shift Register IC 2805-(7) which is activated by a High Level. The CCVS signal present at CIC 2850-(48) passes through the 3MHz low pass filter, in which the Chroma components are attenuated. The CVS signal reaches the signal path described in para. a.) via CT 2837, CD 2840, C 2847 and CIC 2850-(2) which on S-VHS and VHS operation is identical right up to the NLE stage (CIC 2950), This is switched off on VHS record. From CIC 2950-(9), the CVS is fed directly in one path to CIC 2850-(10), and in the other path via CD 2859 in which non-linear emphasis is introduced determined by the values of CC 2859 and CR 2860. The signal is coupled out by CC 2860 and CIC

## I Video 2

**1. Registrazione**

In registrazione, il segnale FBAS (composito) proveniente dal modulo croma giunge attraverso S 6-9 e pin 46 al C.I. CIC 2850, dove percorre uno stadio di regolazione automatica del guadagno (AGC). Successivamente il percorso del segnale si suddivide per la registrazione ed il funzionamento EE.

- Percorso del segnale in registrazione

Il segnale FBAS lascia al pin 48 il CIC 2850 ed, a seconda del tipo di funzionamento, scorre in uno dei 3 percorsi circuitali illustrati.

a.) Tipo di funzionamento **S-VHS**-HF/AV/CV-NP, LP –attivato dal registro a scorrimento IC 2805-(6)

Da CIC 2850-(48), il segnale FBAS percorre i transistor CT 2820, CT 2819 e CT 2815. Nel passabasso (F 2810) insieme al circuito di blocco della portante croma (4,43MHz) viene filtrato il contenuto cromatico ed il segnale BAS viene inviato al CIC 2850-(2) per mezzo di CT 2810, C 2807, CD 2807 e C 2847. Tra i pin 2 e 7 di CIC 2850 tale segnale attraversa alcuni stadi che in registrazione non hanno importanza. Da pin 7, il segnale BAS arriva al pin 9 e quindi allo stadio di separazione del sincronismo nel CIC 2850. Il segnale composito di sincronismo fissato e regolato abbandona il CIC 2850 al pin 44 e giunge al modulo croma attraverso CT 2765 e S 6-1. Contemporaneamente, in uno stadio di filtro (CR 2785, CC 2785, CR 2783, CC 2782, CR 2782, CT 2780, CT 2777) si genera l'impulso di quadro che viene inviato poi al modulo croma attraverso S 7-9 e successivamente al mod. comando funzioni II per mezzo di A 2-7.

Il segnale BAS regolato giunge inoltre da CIC 2850-(7) al selettore di funzioni CIC 2915-(8) attraverso un commutatore IC 2900-(6), -(8) e la linea di ritardo F 2910. Al pin 6 il segnale BAS abbandona il CIC 2915, viene ricondotto ad esso tramite C 2922 e pin 11 e giunge per mezzo del pin 5 ad uno stadio NLE per S-VHS-CIC 2950-(1). Esso effettua una esaltazione del segnale BAS (SUB EMPHASIS) non lineare, cioè dipendente dalla frequenza e dall'ampiezza che porta ad un miglioramento dell'immagine. Poichè questa esaltazione deve intervenire in modo differente per S-VHS-NP (Normal-Play) e S-VHS-LP (Long-Play), essa viene comandata dal registro a scorrimento IC 2805 attraverso il bus seriale, al pin 14 del quale si trova un livello High in Long-Play (mentre in Normal-Play è presente livello Low) che applica a massa il pin 5 di CIC 2950 per messo di CT 2973. Nel modo di registrazione VHS è invece disponibile un livello High nel registro a scorrimento IC 2805-(11), il quale attraverso CT 2965 pone a massa il pin 7 di CIC 2950 e così esclude l'esaltazione. Il ritorno del segnale BAS a C.I. CIC 2850-(10) avviene per mezzo di CIC 2950-(9) e CC 2858.

b.) Funzionamento **VHS**

Nel tipo di registrazione VHS, con qualsiasi segnale di ingresso, il sequente percorso del segnale viene abilitato dal registro a scorrimento IC 2805-(7) con un livello High. Il segnale FBAS applicato a CIC 2850-(48) percorre il passabasso da 3MHz F 2835, dove la parte croma viene attenuata. Il segnale BAS, dopo aver superato i componenti CT 2837, CD 2840, C 2847, CIC 2850-(2), giunge al percorso del segnale descritto in a.) il quale, compreso lo stadio NLE (CIC 2950) è identico sia in funzionamento VHS che S-VHS. Questo è escluso nella registrazione VHS. Da CIC 2950-(9), il segnale BAS arriva da un lato diretta-

und im CIC 2850 zum "direkten" BAS-Signal addiert.

c.) Betriebsart **S-VHS über die Eingänge S1/S2.**

Bei dieser Betriebsart wird folgender Signalweg vom Schieberegister IC 2805-(5) durch einen High-Pegel aktiviert. Das an CIC 2850-(48) anstehende BAS-Signal durchläuft den 5MHz-Tiefpass F 2825, erreicht über CT 2827, CD 2832, C 2847 und CIC 2850-(2) den unter a.) beschriebenen Signalweg und wird wie dort beschrieben weiterverarbeitet.

Im CIC 2850 hebt man die hochfrequenten Anteile des BAS-Signals in einer linearen Preemphasis (M.EMPH) nochmals an. Diese wird bei der Wiedergabe rückgängig gemacht. Dadurch erreicht man eine Verbesserung des Signal-/Rauschabstandes. Ausgehend vom Haupteingang CIC 2850-(10), vom Ausgang CIC 2850-(14) und vom Gegenkopplungseingang CIC 2850-(12), bestimmen folgende Bauteile die lineare Anhebung:

VHS / S-VHS: CR 2863, CR 2862, C 2862, C 2861.

Die Ansteuerung des FM-Modulator-Eingangs CIC2850-(15) erfolgt über den Schalter CIC 2870 abhängig von der jeweiligen Betriebsart (VHS, S-VHS). Der Schalter wird vom Schieberegister IC 2805 über CIC 2870-(11) angesteuert. Er schaltet bei S-VHS-Betrieb die Spannung $+5V_F$ von CIC 2870-(14) nach -(13). Über den Synchronwert-Einsteller R 2873 und CR 2872 gelangt diese als Grundeinstellung an den FM-Modulatoreingang CIC 2850-(15). Daraus ergibt sich für S-VHS eine Synchronfrequenz von 5,4 MHz. Das BAS-Signal gelangt von CIC 2850-(14) über CIC 2870-(15), -(1), den Weißwert-Einsteller R 2865 und CR 2734 ebenfalls an CIC 2850-(15) und bewirkt den Hub für S-VHS.

Bei VHS-Betrieb erfolgt die Ansteuerung des FM-Modulators analog zu S-VHS, jedoch über folgenden Weg:

Die Spannung $+5V_F$ wird von CIC 2870-(14) nach CIC 2870-(12) geschaltet und über den Einsteller R 2873 dem CIC 2850-(15) zugeführt. Das BAS-Signal erreicht über CIC 2870-(15), -(2) und den Einsteller R 2867 ebenfalls CIC 2850-(15).

Der CIC 2880 stellt, zusammen mit 8 Einstellreglern (R 2880, R 2882, R 2883, R 2885, R 2888, R 2892, R 2893, R 2895) die Umschaltung (2 x 4-fach-Wahlschalter) des Weißclip-Pegels und des Schwarzclip-Pegels dar. Dieser wird abhängig von der Betriebsarten S-VHS-NP, -LP und VHS-NP, -LP vom Schieberegister IC 2805 über CIC 2880-(9) geschaltet. Dabei liegen an CIC 2880-(11), -(12), -(14), -(15) die Einsteller für den Weißclip und an CIC 2880-(1), -(2), -(4), -(5) die Einsteller für den Schwarzclip. Der Wert für den Schwarzclip wird von CIC 2880-(3) dem CIC 2850-(16), der Wert für den Weißclip von CIC 2880-(13) dem CIC 2850-(17) zugeführt. Die Clip-Werte sind an CIC 2850-(14) meßbar.

Das dem CIC 2850 über Pin 15 zugeführte BAS-Signal steuert den internen FM-Modulator. Von dort gelangt es über CIC 2850-(18), den Aufsprechstrom-Einsteller R 2722, CT 2725 und S10-5 zum Videobaustein 3.

### 1.1 Durchschleifbetrieb

**a.) HF-, AV-, CV-Aufnahme**

Für den Durchschleifbetrieb führt man das FBAS-Signal (EE-Signal) über CIC 2850-(39) und S 8-5 dem Videobaustein 1 zu und wird über S 8-6 dem CIC 2850-(40) zugeführt. Im CIC 2850 durchläuft es eine Verstärkerstufe und wird über Pin 42, CT 2760 und S 6-7 dem Chromabaustein zugeführt.

**b.) Aufnahme über die S-Eingänge**

Bei dieser Aufnahmeart gelangt das BAS-2850-(11) and added to the "direct" CVS signal in CIC 2850.

c.) Operating Mode **S-VHS via the inputs S1/S2.**

On this operation mode the following path is activated by a High Level from the Shift Register 2805-(5). The CVS signal present on CIC 2850-(48) passes through a 5MHz low pass filter. The CVS signal reaches the path described in para. a.) via CT 2827, CD 2832, C 2847 and CIC 2850-(2) in which it is processed as already described.

In CIC 2850 the high frequency components in the CVS signal are increased again in a linear emphasis circuit (M.EMPH). This process is reversed on playback and as a result an improvement in the signal-to-noise ratio is obtained. At the outputs of the Main input, from the output of CIC 2850-(10) and from the negative feed-back input to CIC 2850-(12) the linear emphasis is determined by the following components:

VHS/S-VHS: CR 2863, CR 2862, C 2862, C 2861.

The drive to the FM modulator input CIC 2850-(15) is carried out by the switch CIC 2870 depending upon the operating mode (VHS/S-VHS). The switch is controlled by the Shift Register IC 2805 via CIC 2870-(11). On S-VHS it connects the $+5V_F$ supply from CIC 2870-(14) to -(13). This is fed from the Sync Value preset R 2873 as the basic adjustment to the FM Modulator input CIC 2850-(15). This results in a Sync Frequency of 5.4MHz for S-VHS. The CVS signal is fed from CIC 2850-(14), via CIC 2870-(15), -(1), the White Value preset R 2865 and CR 2734 eventually to CIC 2850-(15) and produces the deviation for S-VHS.

On VHS operation, the drive to the FM Modulator is similar to S-VHS, with the exception of the following differences:

The supply $+5V_F$ is switched from CIC 2870-(14) to CIC 2870-(12) and is fed to CIC 2850-(15) via the preset R 2873. The CVS signal eventually reaches CIC 2850-(15) via CIC 2870-(15), -(2) and the preset R 2867.

The CIC 2880 sets, in combination with eight adjustment presets (R 2880, R 2882, R 2883, R 2885, R 2888, R 2892, R 2893, R 2895) the selection (2 x 4-fold selection switch) of the White Clip and the Black Clip Levels. These are dependant upon the operating modes S-VHS-NP, -LP and VHS-NP, -LP and selected from the Shift Register IC 2805 via CIC 2880-(9). For this the preset for White Clip is connected to CIC 2880-(11),-(12),-(14),-(15) and the preset for Black Clip to CIC 2880-(1),-(2),-(4),-(5). The value for Black Clip is fed from CIC 2880-(3) to CIC 2850-(16) and the value for White Clip from CIC 2880-(13) to CIC 2850-(17). The Clip values can be measured on CIC 2850-(14).

The CVS signal fed to CIC 2850 on Pin 15 drives the integrated FM Modulator. From here it is fed from CIC 2850-(18), the record current preset R 2722, CT 2725 and S 10-5 to the Video Module 3.

### 1.1 Loop-through Operation

**a.) RF-, AV-, CV-Record**

For loop-through operation the CCVS signal (E-to-E Signal) is fed via CIC 2850-(39) and S 8-5 to the Video Module 1 and from here from S 8-6 to the CIC 2850-(40). In CIC 2850 the signal passes through an amplifier stage and is then fed from Pin 42, CT 2760 and S 6-7 to the Chroma Module.

**b.) Record from the S-inputs**

On this record mode the CVS signal is fed from CIC 2850-(48) via the filter F 2825, CT 2827 mente al CIC 2850-(10) e dall'altro attraverso CD 2859, dove avviene l'esaltazione non lineare la cui entità è determinata da CC 2859 e CR 2860. Il segnale viene accopiato mediante CC 2860 e CIC 2850-(11) e nell'integrato è aggiunto al segnale BAS "diretto".

c.) Funzionamento **S-VHS tramite ingressi S1/S2**

Per questo tipo di funzionamento, il seguente percorso del segnale viene attivato dal registro a scorrimento IC 2805-(5) grazie ad un livello High. Il segnale BAS presente in CIC 2850-(48) attraversa il passabasso da 5MHz F 2825. Mediante CT 2827, CD 2832, C 2847 e CIC 2850-(2), il segnale BAS raggiunge il percorso del segnale descritto al punto a.) e viene elaborato in modo analogo.

Nel CIC 2850, le parti del segnale BAS ad alta frequenza vengono nuovamente esaltate in una preenfasi lineare (M. EMPH). Questa viene annullata durante la riproduzione. In tal modo si ottiene un miglioramento del rapporto segnale/rumore. Dipendentemente dall'ingresso principale CIC 2850-(10), dall'uscita CIC 2850-(14) e dall'ingresso di controreazione CIC 2850-(12), i seguenti componenti determinano l'esaltazione lineare:

VHS/S-VHS: CR 2863, CR 2862, C 2862 e C 2861.

Il pilotaggio dell'ingresso modulatore FM CIC 2850-(15) avviene tramite il commutatore CIC 2870, a seconda del tipo di funzionamento scelto (VHS, S-VHS). Il commutatore viene comandato dal registro a scorrimento IC 2805 per mezzo di CIC 2870-(11). In funzionamento S-VHS, esso applica la tensione $+5V_F$ da CIC 2870-(14) verso -(13). Attraverso il regolatore del valore di sincronismo R 2873 e CR 2872, questa giunge come regolazione di base all'ingresso del modulatore FM CIC 2850-(15). Da ciò si ricava per S-VHS una frequenza di sincronismo di 5,4MHz. Il segnale BAS proviene da CIC 2850-(14) e percorrendo CIC 2870-(15), -(1), il regolatore del valore del bianco R 2865 e CR 2734 giunge pure al CIC 2850-(15) ed attiva la deviazione per S-VHS.

In funzionamento VHS, il pilotaggio del modulatore FM avviene analogamente ad S-VHS, diverse sono però le sezioni che percorre:

La tensione $+5V_F$ viene commutata da CIC 2870-(14) verso CIC 2870-(12) ed inviata a CIC 2850-(15) per mezzo del regolatore R 2873. Il segnale BAS raggiunge pure CIC 2850-(15) attraverso CIC 2870-(15), -(2) ed il regolatore R 2867. Il CIC 2880 rappresenta, assieme ad 8 regolatori (R 2880, R 2882, R 2883, R 2885, R 2888, R 2892, R 2893, R 2895) la commutazione (due selettori a 4 posizioni) dei livelli clamp del bianco e del nero. Questo viene commutato corrispondentemente ai tipi di funzionamento S-VHS-NP, -LP e VHS-NP, -LP dal registro a scorrimento IC 2805 attraverso CIC 2880-(9). I regolatori per il clamp del bianco si trovano in CIC 2880-(11), -(12), -(14), -(15) mentre quelli del nero sono previsti in CIC 2880-(1), -(2), -(4), -(5). Il valore per il clamp del nero viene inviato da CIC 2880-(3) a CIC 2850-(16), quello per il bianco viene invece fornito da CIC 2880-(13) a CIC 2850-(17). Tali valori clamp sono misurabili nel CIC 2850-(14).

Il segnale BAS inoltrato dal pin 15 al C.I. CIC 2850 comanda il modulatore FM interno. Da qui esso raggiunge il modulo video 3 attraverso CIC 2850-(18), il regolatore della corrente di registrazione R 2722, CT 2725 e S 10-5.

### 1.1 Funzionamento passante

**a.) Registrazione HF, AV e CV**

Per il funzionamento passante, il segnale FBAS (segnale EE) viene inviato al modulo video 1 attraverso CIC 2850-(39) e S 8-5 e

Signal von CIC 2850-(48) über das Filter F 2825, CT 2827 und C 2812 an IC 2800-(6). Von dort wird das BAS-Signal nach Pin 8 durchgeschaltet, durchläuft einen Verstärker (CT 2795, CT 2793), den Emitterfolger CT 2790 und wird über S 6-5 dem Chromabaustein zugeführt. Die Steuerung des Schalters IC 2800 erfolgt durch das Schieberegister IC 2805-(4).

### c.) Boxing-Aufnahme / Titelseiten / Uhr - Datum / Untertitel-Aufnahme

Bei dieser Aufnahmeart gelangt das Box-Signal oder das Signal für ganze Seiten vom Chromabaustein über S 6-3 an den Schalter IC 2900-(1). Dieser wird vom Box-Impuls, der bei Bedarf über S 7-5 an IC 2900-(2) ansteht, gesteuert.

### 2. Wiedergabe

Bei Wiedergabe gelangt das Signal "FM vom Band" mit einer Amplitude von ca. 300 mV vom Videobaustein 3 über S 10-3 zum CIC 2850-(21). In diesem IC durchläuft es einen Tiefpass, eine Stufe zum Laufzeitausgleich, einen Begrenzer, einen Hochpass und den Demodulator. An Pin 27 verläßt das demodulierte Signal, überlagert mit dem doppelten FM-Träger, das CIC 2850. Nach dem Emitterfolger CT 2683 durchläuft es das VHS- bzw. S-VHS-Tiefpassfilter:

**VHS:** CC 2647 / CL 2647 / CC 2645 / CL 2645/ CC 2643 / L 2640 / CC 2640 / CC 2642 / CL 2642.

**S-VHS:** CC 2633 / CL 2633 / CL 2632 / CC 2632 / CC 2630 / L 2627 / CC 2631 / CC 2628/ CL 2628.

Das vom doppelten FM-Träger befreite BAS-Signal gelangt nun über Pin 6 (S-VHS) bzw. Pin 4 (VHS) in das Schalt-IC 2620, wo es nach Pin 8 durchgeschaltet wird. Die Steuerung des Schalters übernimmt das Schieberegister IC 2805-(13) über IC 2620-(2) abhängig von der Norm des jeweiligen Signals. Das BAS-Signal wird über einen Verstärker (CT 2610, CT 2617) dem CIC 2850-(29) zugeführt und gelangt im CIC 2850 an einen weiteren Verstärker. Auf diesen wirkt über CIC 2850-(32) die lineare Deemphasis CR 2665, CR 2663, C 2663, C 2662 und über CIC 2850-(31) eine Schaltung zur Frequenzgangkorrektur. Diese wird bei S-VHS vom Schieberegister IC 2805-(13) über CT 2695 bzw. bei VHS vom Schieberegister IC 2805-(11) über CT 2698 gesteuert.
Von CIC 2850-(48) durchläuft bei S-VHS-Betrieb das BAS-Signal den Tiefpass F 2825, den Transistor CT 2827 und gelangt über C 2847 an CIC 2850-(2).
Bei VHS-Betrieb durchläuft das an CIC 2850-(48) anstehende BAS-Signal den Tiefpass F 2835, CT 2837, CD 2840 und gelangt über C 2847 an CIC 2850-(2).
Über CIC 2850-(6) und S 8-8 leitet man das mit Dropouts behaftete BAS-Signal der 1H-Verzögerungsleitung auf dem Videobaustein 1 zu. Das um 1 Zeile verzögerte BAS-Signal erreicht über S 8-9 den Pin 3 des CIC 2850. Bei FM-Einbrüchen im "direkten" Signal schaltet das CIC 2850 auf das verzögerte an Pin 3 anstehende BAS-Signal um und kompensiert so die Dropouts. Das an CIC 2850-(7) anstehende dropout-freie BAS-Signal wird sowohl über CIC 2850-(9) der Synchronabtrennstufe als auch dem Pin 6 des IC 2900 zugeführt. In diesem wird es nach Pin 8 durchgeschaltet und erreicht nach dem CT 2910 und dem Schalter CIC 2915-(14), -(5) den CIC 2950-(1).
Ähnlich wie bei Aufnahme wird die nichtlineare Anhebung abhängig von VHS bzw. S-VHS über IC 2805-(11), CT 2965, CIC 2950-(7) geschaltet:
VHS: IC 2805-(11) – High;
S-VHS: IC 2805-(11) – Low

and C 2812 to CIC 2800-(6). From here the CVS signal is connected to Pin 8, passes through an amplifier (CT 2795, CT 2793), the emitter follower CT 2790 and via S 6-5 to the Chroma Module. The switch IC 2800 is controlled by the Shift Register IC 2805-(4).

### c.) Boxing-Record / Title Pages / Time-Date Sub-Title-Record

On these record modes, the Box signal or the signal for complete pages is fed from the Chroma Module via S 6-3 to the switch IC 2900-(1). This is controlled by the Box-pulse which is present as required via S 7-5 to the IC 2900-(2).

### 2. Playback

On playback, the "FM from tape" is fed at an amplitude of approx. 300mV from the Video Module 3 via S 10-3 to the CIC 2850-(21). In this IC, the signal passes through a low pass filter, a stage for delay time matching, a limiter, a high pass filter and the demodulator. The demodulated signal leaves from Pin 27 of CIC 2850 superimposed with the doubled FM carrier. After the emitter follower CT 2683 the signal passes on VHS or S-VHS through the low pass filter:

**VHS:** CC 2647 / CL 2647 / CC 2645 / CL 2645/ CC 2643 / L 2640 / CC 2640 / CC 2642 / CL 2642

**S-VHS:** CC 2633 / CL 2633 / CL 2632 / CC 2632 / CC 2630 / L 2627 / CC 2631 / CC 2628/ CL 2628.

The CCVS signal, now free from the doubled FM carrier is now fed from Pin 6 (S-VHS) or Pin 4 (VHS) to the switch IC 2620 in which it is switched to Pin 8. The control of the switch is carried out by the Shift Register IC 2805-(13) via IC 2620-(2) depending upon the Standard appropriate to the signal. The CVS signal is now fed through an amplifier (CT 2610, CT 2617) to the CIC 2850-(29) and is then fed in CIC 2850 to a further amplifier. The signal then passes from CIC 2850-(32) through the linear de-emphasis CR 2805, CR 2888, C 2663, C 2662 and via CIC 2850-(31) to a circuit for a frequency response correction. This is controlled on S-VHS from the Shift Register IC 2805-(13) via CT 2695 or on VHS from the Shift Register IC 2805-(11) via CT 2698.
From CIC 2850-(48) the CVS signal on S-VHS-Mode passes through the Low Pass Filter F 2825, the transistor CT 2827 and is fed from C 2847 to the CIC 2850-(2).
On VHS-Mode the CVS signal present on CIC 2850-(48) passes through a Low Pass Filter F 2835, CT 2837, CD 2840 and is fed from CT 2847 to CIC 2850-(2).
From CIC 2850-(6) and S 8-8 the CVS signal containing dropouts passes through the 1H-Delay Line to the Video Module 1. The CVS signal delayed by one line reaches Pin 3 of CIC 2850 via S 8-9. If there is a break in the "Direct" FM signal, the CIC 2850 switches to the delayed CVS signal on Pin 3 and thereby compensates for dropouts. The dropout-free CVS signal present on CIC 2850-(7) is fed in also via CIC 2850-(9) to the Sync Separation Stage as well as to Pin 6 IC 2900. In this it is switched to Pin 8 and reaches, via the switch CIC 2915-(14), -(5), the CIC 2950-(1) after passing through the CT 2910. In a similar manner, on record, the non linear pre-emphasis depending on VHS or S-VHS is switched off via CIC 2805-(11), CT 2965, CIC 2950-(7) as follows:
VHS: IC 2805-(11) – High;
S-VHS: IC 2805-(11) – Low.
Additionally, on S-VHS Mode, switching between NP and LP is carried out via CIC 2950-(5), CT 2973, IC 2805-(14), on which on LP mode a High Level is present on IC 2805-(14).

successivamente al CIC 2850-(40) per mezzo di S 8-6. Nell'integrato esso percorre uno stadio di amplificazione e giunge al modulo croma mediante il pin 42, CT 2760 e S 6-7.

### b.) Registrazione tramite ingressi S

Per questo tipo di registrazione, il segnale BAS giunge da CIC 2850-(48) ad IC 2800-(6) attraverso il filtro F 2825, CT 2827 e C 2812. Da qui esso viene inoltrato al pin 8, percorre quindi un amplificatore (CT 2795, CT 2793), l'inseguitore d'emettitore CT 2790 e viene fornito al modulo croma per mezzo di S 6-5. Il comando del commutatore IC 2800 è ad opera del registro a scorrimento IC 2805-(4).

### c.) Registrazione di testi, pagine con titoli, ora e data e sottotitoli

In questo tipo di registrazione, il segnale utilizzato per comporre testi o pagine intere fornito dal modulo croma viene inviato ad S 6-3 e quindi al commutatore IC 2900-(1). Questo viene comandato da un apposito impulso che in caso di necessità viene applicato da S 7-5 ad IC 2900-(2).

### 2. Riproduzione

In riproduzione, il segnale FM fornito dal nastro giunge con un'ampiezza di ca. 300mV dal modulo video 3 al CIC 2850-(21) attraverso S 10-3. In questo integrato esso percorre un passabasso, uno stadio per la compensazione del tempo di transito, un limitatore, un passalto ed il demodulatore. Al pin 27 il segnale demodulato abbandona il CIC 2850 assieme alla portante FM doppia. Dopo l'inseguitore d'emittitore CT 2683, esso percorre un filtro passabasso VHS o S-VHS:

**VHS:** CC 2647/CL 2647/CC 2645/CL 2645/ CC 2643/L 2640/CC 2640/CC 2642/CL 2642.

**S-VHS:** CC 2633/CL 2633/CL 2632/CC 2632/ CC 2630/L 2627/CC 2631/CC 2628/CL 2628.

Il segnale BAS privo della portante FM doppia giunge ora da pin 6 (S-VHS) o pin 4 (VHS) all'IC commutatore 2620 e gui viene inoltrato al pin 8. Il pilotaggio del commutatore è svolto dal registro a scorrimento IC 2805-(13) tramite IC 2620-(2) a seconda della norma del segnale presente. Il segnale BAS viene condotto al CIC 2850-(29) attraverso un amplificatore (CT 2610, CT 2617) e nell'integrato raggiunge un ulteriore amplificatore, In questo interviene la deenfasi lineare CR 2665, CR 2663, C 2663, C 2662 mediante CIC 2850-(32) ed un circuito per la correzione della risposta in frequenza per mezzo di CIC 2850-(31). Tale circuito, in S-VHS, viene comandato dal registro a scorrimento IC 2805-(13) attraverso CT 2695 ed in VHS dal pin 11 del registro IC 2805 mediante CT 2698.
Da CIC 2850-(48), in funzionamento S-VHS, il segnale BAS percorre il passabasso F 2825, il transistor CT 2827 e giunge in CIC 2850-(2) per mezzo di C 2847.
In funzionamento VHS, il segnale BAS che si trova in CIC 2850-(48) attraversa il passabasso F 2835, CT 2837, CD 2840 ed appare infine nel CIC 2850-(2) passando per C 2847.
Tramite CIC 2850-(6) ed S 8-8 si conduce il segnale BAS contenente dropouts alla linea di ritardo di 1 riga nel modulo video 1. Il segnale BAS ritardato così di 1 riga raggiunge il pin 3 di CIC 2850 attraverso S 8-9. Nei buchi FM (dropout) del segnale "diretto", il CIC 2850 commuta sul segnale BAS ritardato applicato al pin 3 e compensa così eventuali dropouts. Il segnale BAS privo di dropout prelevato da CIC 2850-(7) viene condotto allo stadio separatore di sincronismo attraverso CIC 2850-(9) come anche ad IC 2900 passando per il pin 6. In quest'ultimo esso viene inoltrato al pin 8 e dopo CT 2910 ed il commutatore CIC 2915-(14), -(5) raggiunge il CIC 2950-(1). Analogamente a come avviene in registrazione, l'esal-

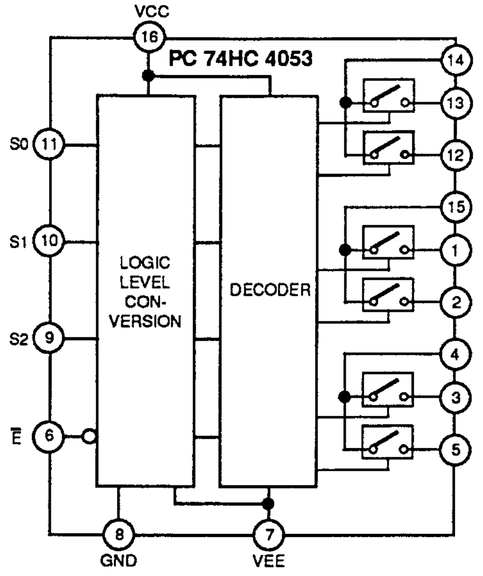
Zusätzlich erfolgt bei S-VHS-Betrieb über CIC 2950-(5), CT 2973, IC 2805-(14) die Umschaltung zwischen NP und LP, wobei bei LP-Betrieb ein High-Pegel an IC 2805-(14) ansteht. Von der NLE-Stufe für S-VHS, CIC 2950-(9) gelangt das BAS-Signal an CIC 2850-(10).
Bei VHS-Betrieb gelangt das BAS-Signal über CD 2859 und die VHS-NLE-Stufe (CC 2859, CR 2860) an CIC 2850-(11), wo es anschließend zum direkten Signal addiert wird.
Um den Rauschanteil zu vermindern leitet man das BAS-Signal über CIC 2870-(4), abhängig von der Betriebsart, über Pin 3, CR 2654, CC 2654 (S-VHS) oder Pin 5, CR 2655, CC 2655 (VHS) dem Pin 34 des CIC 2850 zu. Die Umschaltung erfolgt über den S-VHS-Status des IC 2805-(13). Im CIC 2850 durchläuft das Signal einen Tiefpass und erreicht die NC-Stufe (Noise Canceller), wo auch das normale BAS-Signal von Pin 10 ansteht. Das vom Rauschen befreite BAS-Signal durchläuft im CIC 2850 noch eine Picture Control-Stufe deren Wirksamkeit über R 2692 und CIC 2850-(36) einstellbar ist. An CIC 2850-(39) steht ein rausch- und dropout-freies BAS-Signal, das über S 8-5 der Crispening-Schaltung auf dem Videobaustein 1 zugeführt wird und über S 8-6 und Pin 40 wieder das CIC 2850 erreicht. Zwischen CIC 2850-(40) und -(42) wird das BAS-Signal nochmals verstärkt und über den Emitterfolger CT 2760 und S 6-7 dem Chromabaustein zugeführt.

From the NLE-Stage for S-VHS, CIC 2950-(9) the CVS signal is fed to CIC 2850-(10).
On VHS mode the CVS signal is fed via CD 2859 and the VHS-NLE stage (CC 2859, CR 2860) to CIC 2850-(11) in which it is added subsequently to the direct signal.

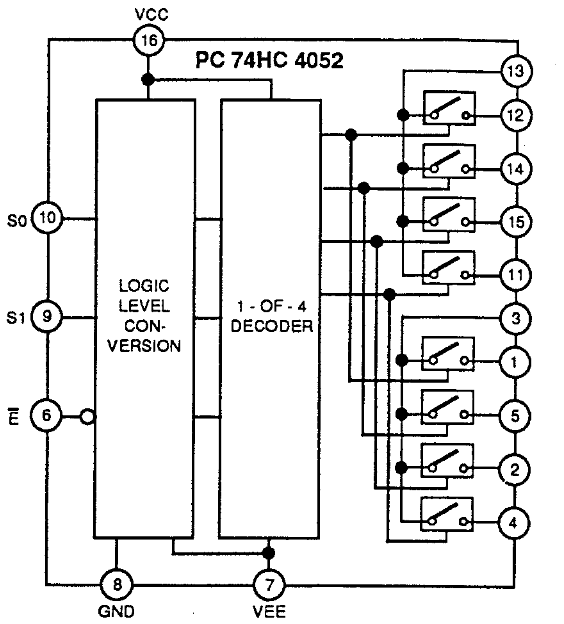
To reduce the noise components the CVS signal is fed from CIC 2870-(4), depending on the operating mode, via Pin 3, CR 2654, CC 2654 (S-VHS) or Pin 5, CR 2655, CC 2655 (VHS) to Pin 34 of CIC 2850. The switchover is carried out by the S-VHS-Status to IC 2805-(13). In CIC 2850 the signal passes through a Low Pass Filter and reaches the NC stage (Noise Canceller), to which the normal CVS signal from Pin 10 is also present. The noise free CVS signal passes through a Picture Control stage in CIC 2850 whose working point is adjustable by R 2692 and CIC 2850-(36). On CIC 2850-(39), a dropout and noise free CVS signal is present and is fed from S 8-5 to the Crispening Stage on the Video Module 1 and also via S 8-6 and Pin 40 back to CIC 2850. Between CIC 2850-(40) and -(42) the CVS signal is amplified again and then fed to the Chroma Module via the emitter follower CT 2760 and S 6-7.

tazione non lineare viene commutata a seconda del funzionamento VHS o S-VHS tramite IC 2805-(11), CT 2965, CIC 2950-(7):
VHS: IC 2805-(11) - High;
S-VHS: IC 2805-(11) - Low.
Inoltre, in funzionamento S-VHS, attraverso CIC 2950-(5), CT 2973, IC 2805-(14), avviene la commutazione tra NP (Normal-Play) ed LP (Long-Play), per la quale in funzionamento LP si forma un livello High su IC 2805-(14). Dallo stadio NLE per S-VHS, CIC 2950-(9), il segnale BAS giunge al CIC 2850-(10). In funzionamento VHS, il segnale BAS giunge attraverso CD 2859 e lo stadio NLE VHS (CC 2859, CR 2860), all'integrato CIC 2850-(11), dove viene sommato al segnale diretto.
Per limitare la componente di fruscio, si invia il segnale BAS prelevato da CIC 2870-(4), in base al tipo di funzionamento, al pin 34 di CIC 2850, tramite pin 3, CR 2654, CC 2654 (S-VHS) o pin 5, CR 2655, CC 2655 (VHS). La commutazione avviene mediante IC 2805-(13) in situazione S-VHS. Nel CIC 2850, il segnale percorre un passabasso e raggiunge lo stadio NC (Noise Canceller) dove si trova anche il normale segnale BAS applicato al pin 10. Il segnale BAS privo del fruscio attraversa in quest'integrato anche uno stadio di controllo dell'immagine, la cui azione è regolabile con R 2692 e CIC 2850-(36). In CIC 2850-(39) si trova un segnale BAS sgombro da rumore e da dropout il quale, tramite S 8-5, viene inviato al circuito Crispening nel modulo video 1 ed attraverso S 8-6 ed il pin 40 ricondotto al CIC 2850. Tra CIC 2850-(40) e -(42), il segnale BAS viene nuovamente amplificato e, tramite l'inseguitore d'emittitore CT 2760 e S 6-7, inoltrato al modulo croma.

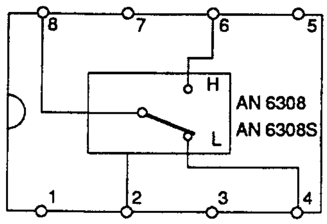
### PC 74 HC4053 (CIC 2870)


VCC
16
PC 74HC 4053
S0 11
S1 10
S2 9
E̅ 6
LOGIC LEVEL CON- VERSION
DECODER
14
13
12
15
1
2
4
3
5
8
GND
7
VEE

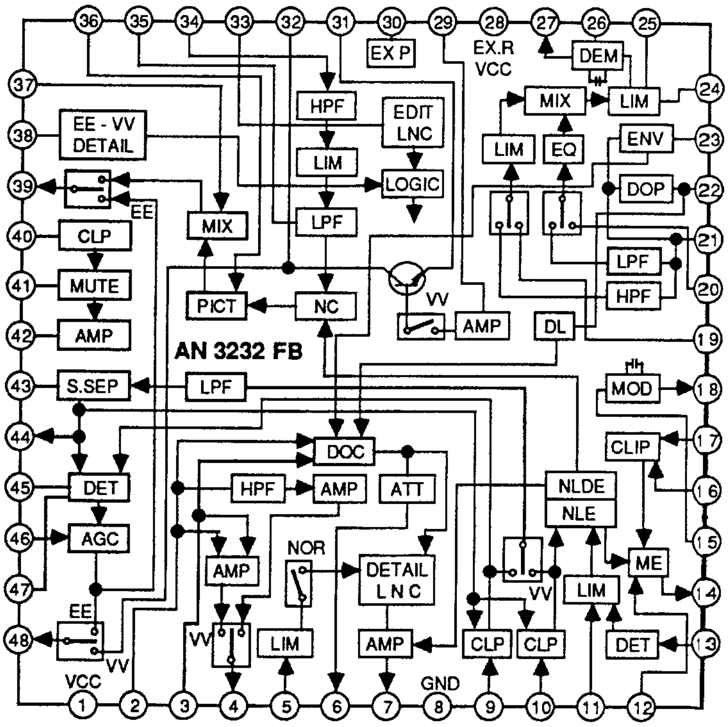
### PC 74 HC 4052 (CIC 2880)


VCC
16
PC 74HC 4052
S0 10
S1 9
E̅ 6
LOGIC LEVEL CON- VERSION
1 - OF - 4 DECODER
13
12
14
15
11
3
1
5
2
4
8
GND
7
VEE

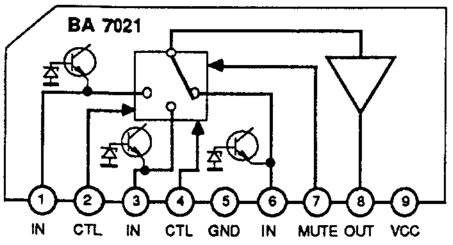
### AN 6308 (IC 2800)


8
7
6
5
H
L
AN 6308
AN 6308S
1
2
3
4

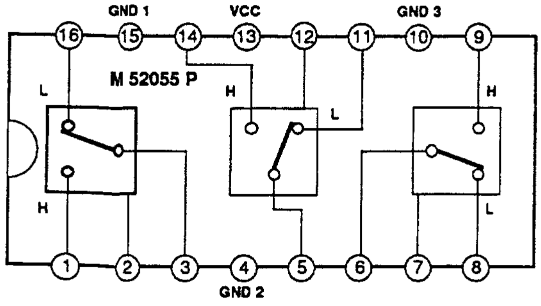
### AN 3232 FB (CIC 2850)


36
35
34
33
32
31
30
29
28
27
26
25
EX P
EX.R VCC
DEM
HPF
EDIT LNC
MIX
LIM
24
37
EE - VV DETAIL
38
LIM
LOGIC
LIM
EQ
ENV
23
39
EE
MIX
LPF
DOP
22
40
CLP
21
41
MUTE
LPF
20
PICT
NC
VV
AMP
HPF
42
AMP
DL
19
AN 3232 FB
43
S.SEP
LPF
MOD
18
44
DOC
CLIP
17
45
DET
HPF
AMP
ATT
NLDE
16
NLE
46
AGC
NOR
15
AMP
DETAIL LNC
ME
47
VV
LIM
14
EE
VV
LIM
AMP
CLP
CLP
DET
48
VV
13
VCC
GND
1
2
3
4
5
6
7
8
9
10
11
12

### BA 7021 (IC 2900)

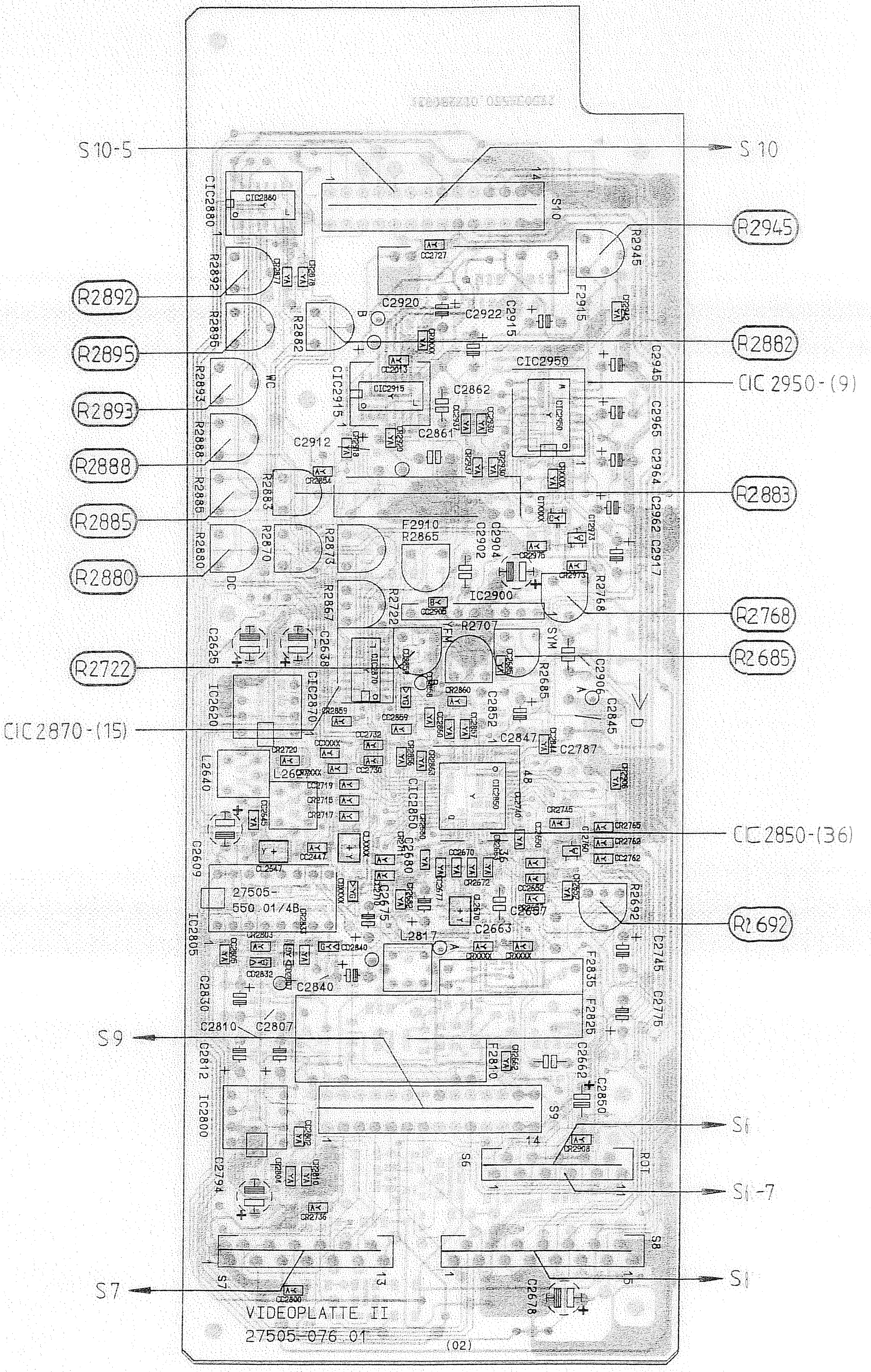

BA 7021
1
2
3
4
5
6
7
8
9
IN
CTL
IN
CTL
GND
IN
MUTE
OUT
VCC

### M 52055 P (CIC 2915)

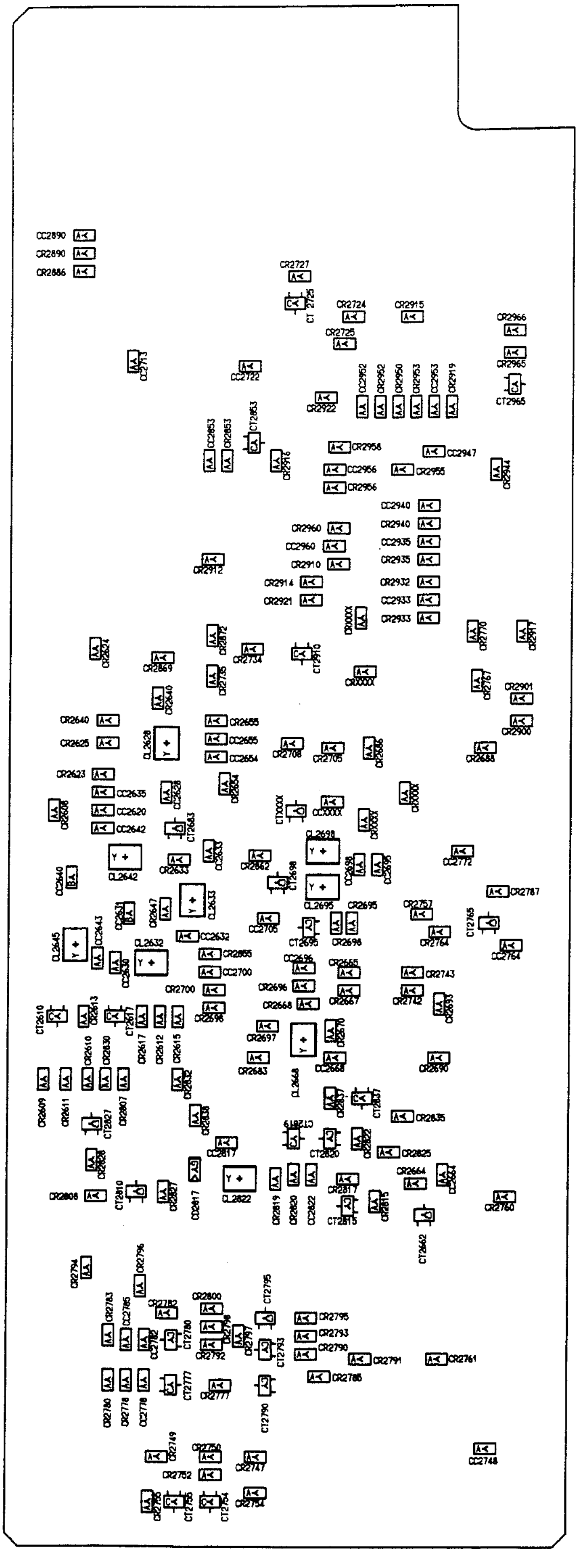

GND 1
VCC
GND 3
16
15
14
13
12
11
10
9
M 52055 P
L
H
H
L
H
L
1
2
3
4
5
6
7
8
GND 2

## Video 2

S 6 - Chroma / Croma
S 7 - Chroma / Croma
S 8 - Video 1
S 9 - Video 3
S 10 - Video 3


S 10-5
S 10
R2945
R2892
R2895
R2882
CIC 2950-(9)
R2893
R2888
R2883
R2885
R2880
R2768
R2685
R2722
CIC 2870-(15)
CIC 2850-(36)
R2692
S 9
S7
VIDEOPLATTE II
27505-076 01
(02)
27505-
550 01/4B

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



## (D) Abgleich (Video 2)

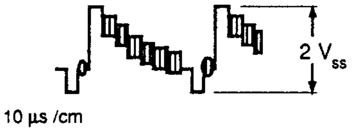
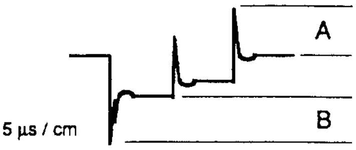
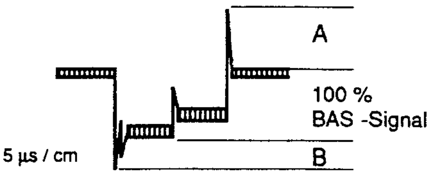
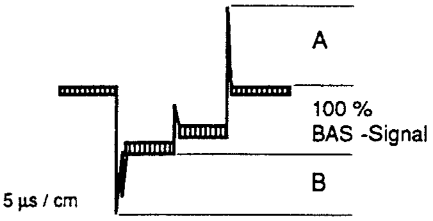
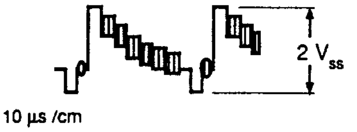
**Meßgeräte :**
Oszilloskop mit Tastkopf 10 : 1, Digitalvoltmeter, Farbgenerator
**Servicearbeiten nach Bausteinwechsel:**
Abgleich Nr. 6

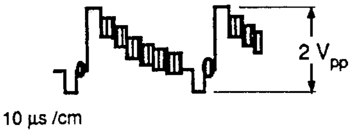
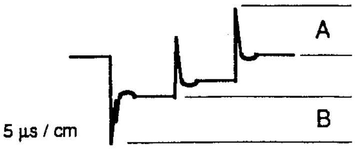
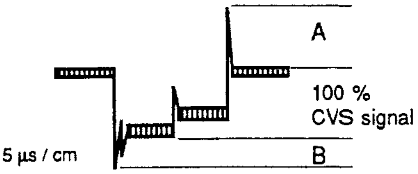
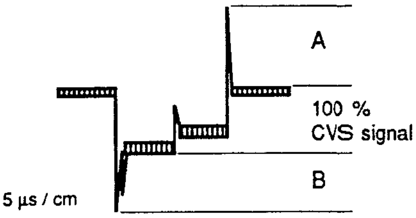
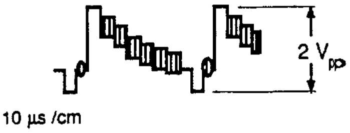
## (GB) Adjustment (Video 2)

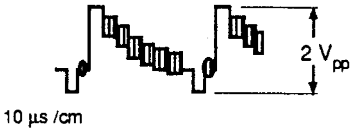
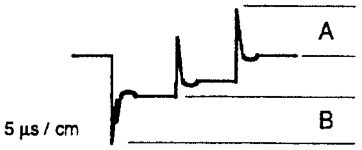
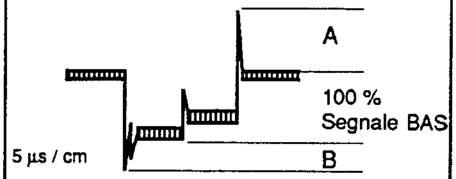
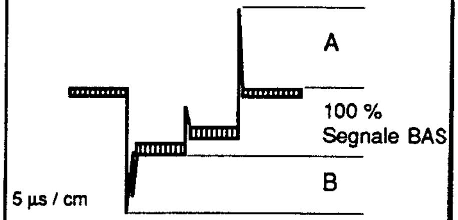
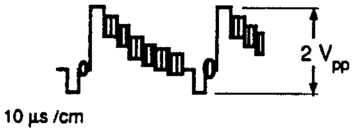
**Test equipment:**
Oscilloscope with 10 : 1 probe, digital voltmeter, colour generator
**Servicing work after changing board:**
Adjustment No. 6

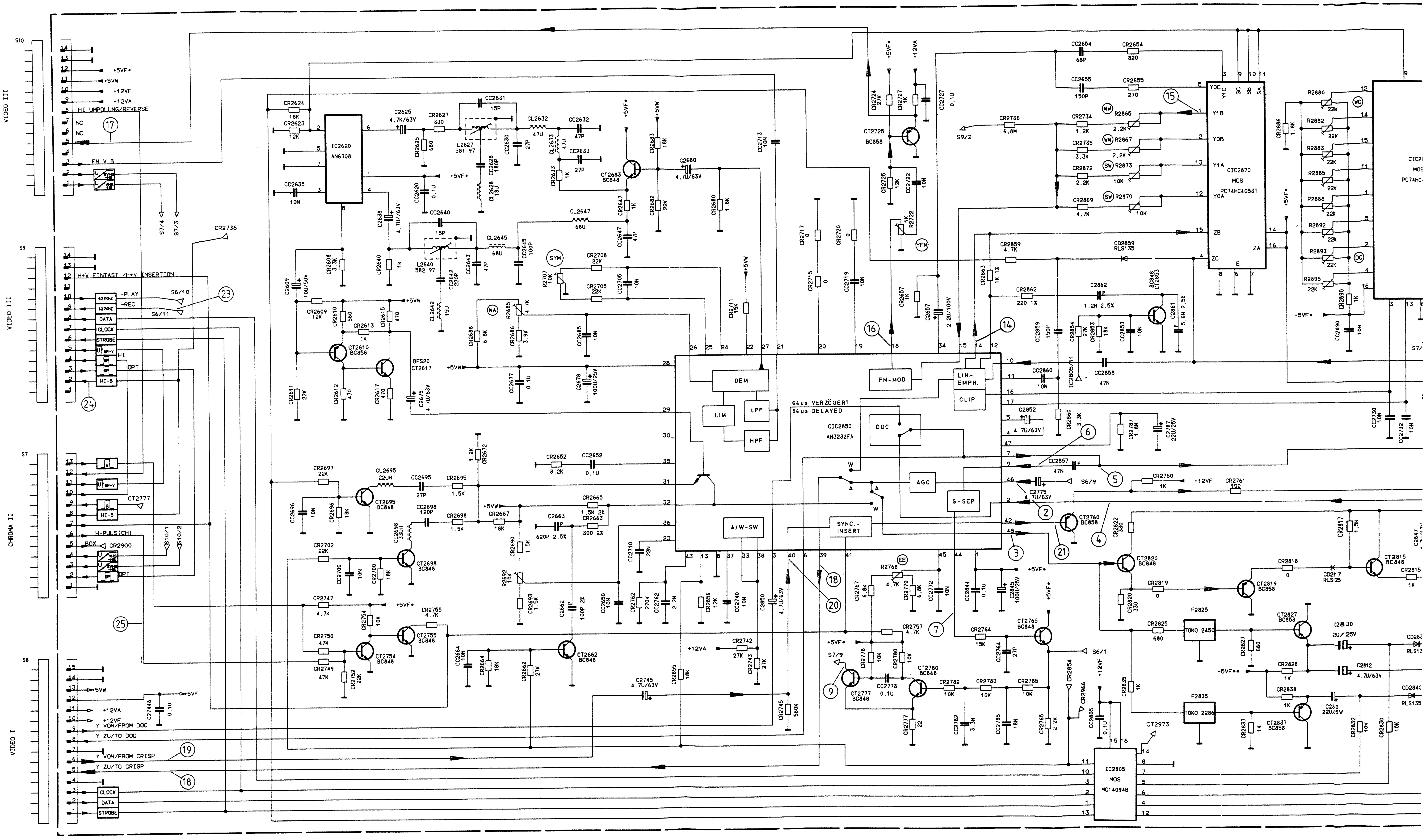
## (I) Taratura (Video 2)

**Strumenti :**
Oscilloscopio con sonda 10 : 1, voltmetro digitale, generatore colore
**Lavori da eseguire dopo la sostituzione del modulo:** taratura No. 6

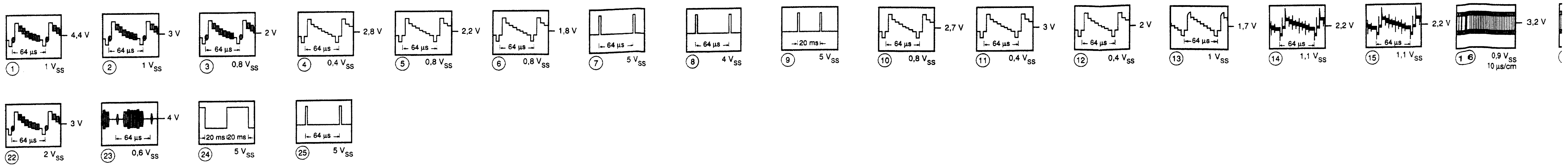
| (D) Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. EE - Amplitude | Farbbalkentestbild einspeisen.<br>Oszilloskop: Kontakt S 6-7 | Aufnahme (VHS-NP) (Schieberegister IC 2805 Pins 7, 11 High Pins 4, 5, 6, 12, 13, 14 Low) | R 2768 |  |
| 2. Sub-Emphasis | Farbbalkentestbild einspeisen.<br>Oszilloskop: CIC 2950-(9)<br>Trigger: S 7-6 | Aufnahme (S-VHS-LP) (Schieberegister IC 2805 Pins 5, 13, 14 High; Pins 4, 6, 7, 11, 12 Low) | R 2945 |  <br>Überschwinger A und B auf gleiche Amplitude einstellen. |
| 3. VHS-Weißbegrenzung Schwarzbegrenzung | Farbbalkentestbild einspeisen.<br>Oszilloskop: CIC 2870-(15)<br>Trigger: S 7-6 | Aufnahme (VHS) | |  |
| Normalplay (NP) | | (Schieberegister IC 2805 Pins 7, 11 High Pins 4, 5, 6, 12, 13, 14 Low) | R 2888<br>R 2880 | Überschwinger A auf 80% des BAS-Signals einstellen.<br>Überschwinger B auf 50% des BAS-Signals einstellen. |
| Longplay (LP) | | (Schieberegister IC 2805 Pins 7, 11, 14 High, Pins 4, 5, 6, 12, 13 Low) | R 2892<br>R 2882 | |
| 4. S-VHS-Weißbegrenzung Schwarzbegrenzung | Farbbalkentestbild einspeisen.<br>Oszilloskop: CIC 2870-(15)<br>Trigger: S 7-6 | Aufnahme (S-VHS) | |  |
| Normalplay (NP) | | (Schieberegister IC 2805 Pins 5, 13 High Pins 4, 6, 7, 11, 12, 14 Low) | R 2893<br>R 2883 | Überschwinger A auf 110% des BAS-Signals einstellen.<br>Überschwinger B auf 70% des BAS-Signals einstellen. |
| Longplay (LP) | | (Schieberegister IC 2805 Pins 5, 13, 14 High, Pins 4, 6, 7, 11, 12 Low) | R 2895<br>R 2885 | |
| 5. Y - Aufsprechstrom | Oszilloskop: Kontakt S 10-5 | S-VHS-Aufnahme | R 2722 | Amplitude auf 0,5 $V_{ss}$ einstellen. |
| 6. Wiedergabeamplitude | Oszilloskop: Kontakt S 6-7<br>Trigger: S 7-6 | Testcassette wiedergeben | R 2685 |  |
| 7. Referenzspannung | Voltmeter: CIC 2850-(36) | Wiedergabe | R 2692 | Spannung auf 2,5V einstellen. |

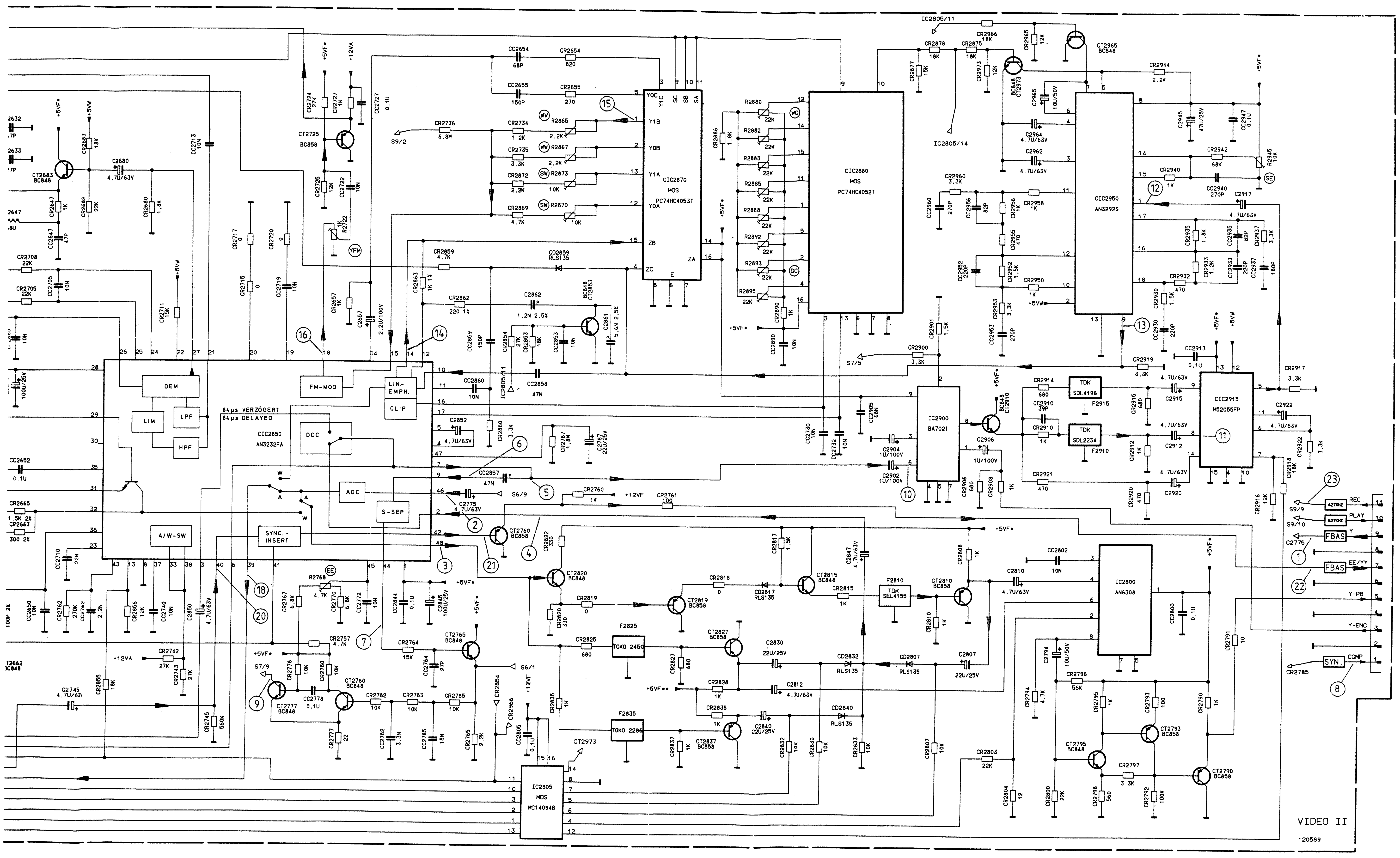
| (GB) Adjustment | Preparation | Cassette Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. EE amplitude | Feed in a colour bar test signal.<br>Oscilloscope:<br>Contact S 6-7 | Record (VHS-NP) (Shift register IC 2805 Pins 7, 11 High Pins 4, 5, 6, 12, 13, 14 Low) | R 2768 |  |
| 2. Sub emphasis | Feed in a colour bar test signal.<br>Oscilloscope:<br>CIC 2950-(9)<br>Trigger: S 7-6 | Record (S-VHS-LP) (Shift register IC 2805 Pins 5, 13, 14 High, Pins 4, 6, 7, 11, 12 Low) | R 2945 |  <br>Set the overshoots A and B to the same amplitude. |
| 3. VHS-<br>White value limiter<br>Black value limiter | Feed in a colour bar test signal.<br>Oscilloscope:<br>CIC 2870-(15)<br>Trigger: S 7-6 | Record (VHS) | |  |
| Normal play (NP) | | (Shift register IC 2805 Pins 7, 11 High Pins 4, 5, 6, 12, 13, 14 Low) | R 2888<br>R 2880 | Set overshoot A to 80% of the CVS signal.<br>Set overshoot B to 50% of the CVS signal. |
| Long play (LP) | | (Shift register IC 2805 Pins 7, 11, 14 High, Pins 4, 5, 6, 12, 13 Low) | R 2892<br>R 2882 | |
| 4. S-VHS-<br>White value limiter<br>Black value limiter | Feed in a colour bar test signal.<br>Oscilloscope:<br>CIC 2870-(15)<br>Trigger: S 7-6 | S-VHS record | |  |
| Normal play (NP) | | (Shift register IC 2805 Pins 5, 13 High Pins 4, 6, 7, 11, 12, 14 Low) | R 2893<br>R 2883 | Set overshoot A to 110% of the CVS signal.<br>Set overshoot B to 70% of the CVS signal. |
| Long play (LP) | | (Shift register IC 2805 Pins 5, 13, 14 High, Pins 4, 6, 7, 11, 12 Low) | R 2895<br>R 2885 | |
| 5. Y record current | Oscilloscope:<br>Contact S 10-5 | S-VHS record | R 2722 | Set amplitude to 0.5 $V_{pp}$. |
| 6. Playback amplitude | Oscilloscope:<br>Contact S 6-7<br>Trigger: S 7-6 | Playback the test cassette | R 2685 |  |
| 7. Reference voltage | Voltmeter:<br>CIC 2850-(36) | Playback | R 2692 | Set voltage to 2.5V. |

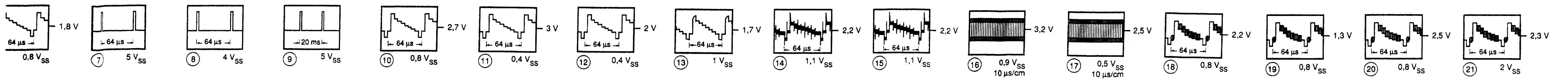
| Ⓘ Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Ampiezza EE | Applicare monoscopio a barre colore.<br>Oscilloscopio: contatto S 6-7 | Registrazione (VHS-NP)<br>(reg. scorrim. IC 2805 pin 7, 11 High; pin 4, 5, 6, 12, 13, 14 Low) | R 2768 |  |
| 2. Subenfasi | Applicare monoscopio a barre colore.<br>Oscilloscopio: CIC 2950-(9)<br>trigger: S 7-6 | Registrazione (S-VHS-LP)<br>(reg. scorrim. IC 2805 pin 5, 13, 14 High pin 4, 6, 7, 11, 12 Low) | R 2945 |  <br>Regolare la sovraoscillazioni A e B alla stessa ampiezza. |
| 3. VHS-<br>Limitazione del bianco<br>Limitazione del nero | Applicare monoscopio a barre colore.<br>Oscilloscopio: CIC 2870-(15)<br>trigger: S 7-6 | Registrazione (VHS) | |  |
| Funzionam. normale (NP) | | (reg. scorrim. IC 2805 pin 7, 11 High pin 4, 5, 6, 12, 13, 14 Low) | R 2888<br>R 2880 | Regolare la sovraoscillazione A all'80% del segnale BAS.<br>Regolare la sovraoscillazione B all'50% del segnale BAS. |
| Funzionam. longplay (LP) | | (reg. scorrim. IC 2805 pin 7, 11, 14 High, pin 4, 5, 6, 12, 13 Low) | R 2892<br>R 2882 | |
| 4. S-VHS:<br>limitazione del bianco<br>limitazione del nero | Applicare monoscopio a barre colore.<br>Oscilloscopio: CIC 2870-(15)<br>trigger: S 7-6 | Registrazione (S-VHS) | |  |
| Funzionam. normale (NP) | | (reg. scorrim. IC 2805 pin 5, 13 High pin 4, 6, 7, 11, 12, 14 Low) | R 2893<br>R 2883 | Regolare la sovraoscillazione A all'110% del segnale BAS.<br>Regolare la sovraoscillazione B all'70% del segnale BAS. |
| Funzionam. longplay (LP) | | (reg. scorrim. IC 2805 pin 5, 13, 14 High, pin 4, 6, 7, 11, 12 Low) | R 2895<br>R 2885 | |
| 5. Corrente di registrazione Y | Oscilloscopio: contatto S 10-5 | Registrazione S-VHS | R 2722 | Regolare a 0, 5 $V_{pp}$ l'ampiezza. |
| 6. Ampiezza di riproduzione | Oscilloscopio: contatto S 6-7<br>trigger: S 7-6 | Riprodurre la cassetta campione | R 2685 |  |
| 7.Tensione di riferimento | Voltmetro: CIC 2850-(36) | Riproduzione | R 2692 | Regolare a 2,5V la tensione. |

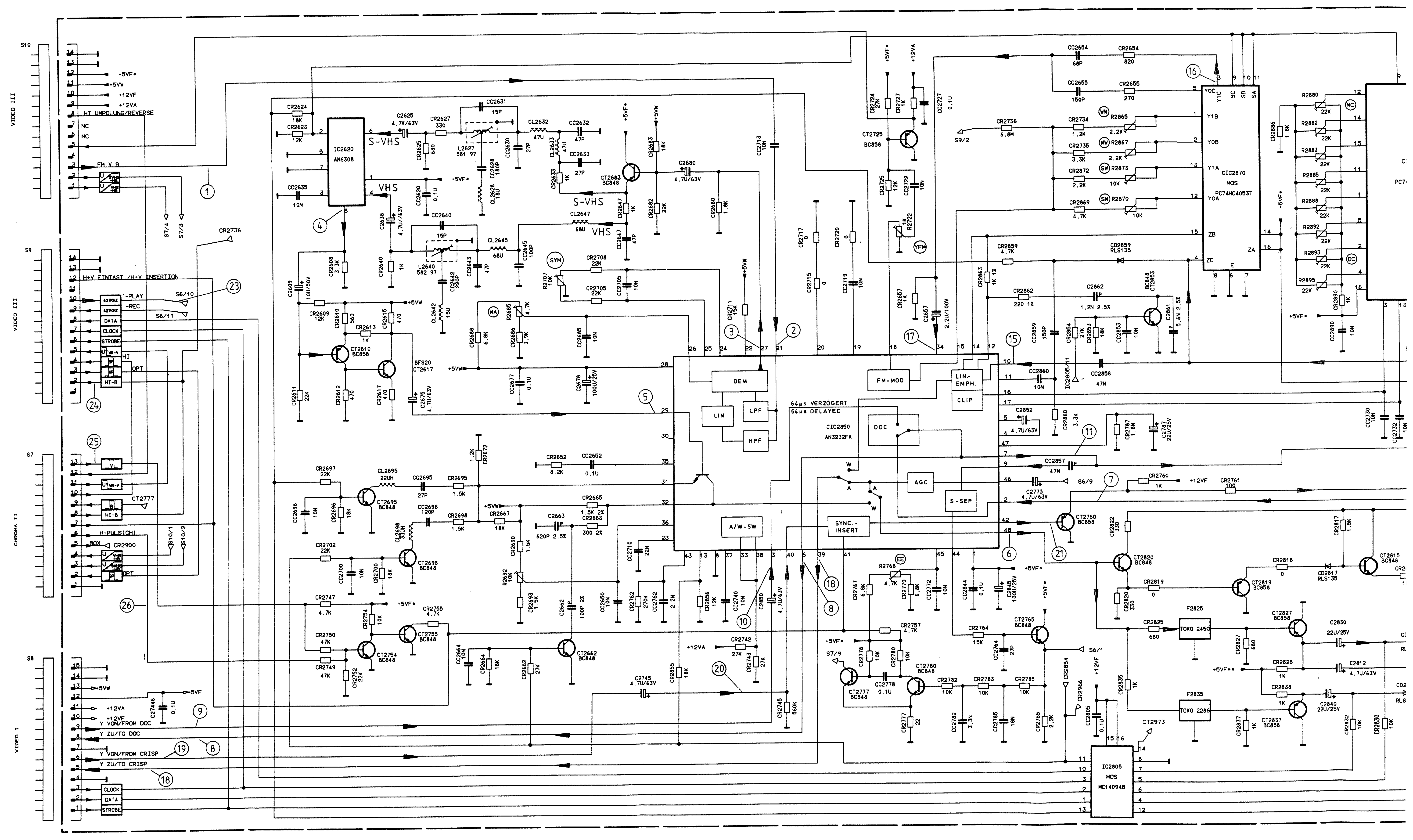

VIDEO III
S10
HI UMPOLUNG/REVERSE
FM V B
S7/4
S7/3
CR2736
VIDEO III
S9
H+V EINTAST /H+V INSERTION
S6/10
S6/11
-PLAY
-REC
DATA
CLOCK
STROBE
HI-8
OPT
CHROMA II
S7
CT2777
H-PULS(CH)
BOX
CR2900
S10/1
S10/2
VIDEO I
S8
+5VW
+5VF
+12VA
+12VF
Y VON/FROM DOC
Y ZU/TO DOC
Y VON/FROM CRISP
Y ZU/TO CRISP
IC2620
AN6308
L2627
581 97
L2640
582 97
CT2610
BC858
BFS20
CT2617
CT2683
BC848
SYM
CT2695
BC848
CT2698
BC848
CT2754
BC848
CT2755
BC848
CT2662
BC848
CT2725
BC858
S9/2
YFM
64µs VERZÖGERT
64µs DELAYED
CIC2850
AN3232FA
DEM
LIM
LPF
HPF
FM-MOD
LIN.-
EMPH.
CLIP
DOC
AGC
S-SEP
A/W-SW
SYNC.-
INSERT
S6/9
S6/1
S7/9
CT2760
BC858
CT2765
BC848
CT2777
BC848
CT2780
BC848
IC2805
MOS
MC14094B
CT2973
CIC2870
MOS
PC74HC4053T
CT2853
BC848
CT2820
BC848
CT2819
BC858
CT2815
BC848
F2825
TOKO 2450
F2835
TOKO 2286
CT2827
BC858
CT2837
BC858
RLS135
PC74HC

**Aufnahme (S-VHS) - HF**
**Record (S-VHS) - RF**
**Registrazione (S-VHS) - AF**

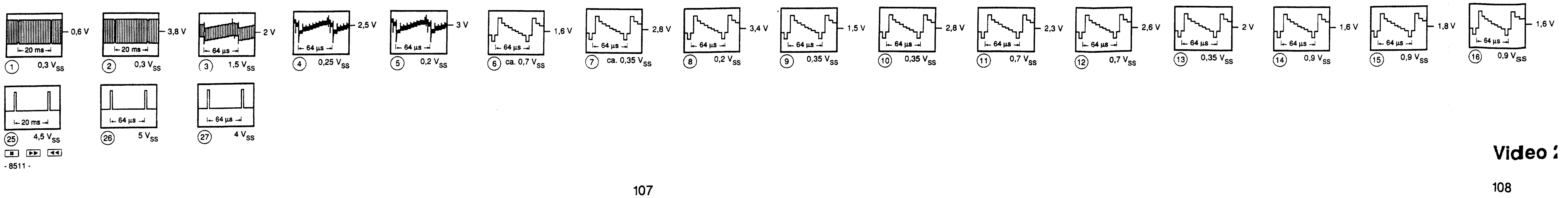



CIC2850
AN3232FA
64µs VERZÖGERT
64µs DELAYED
OEM
LIM
LPF
HPF
DOC
AGC
S-SEP
A/W-SW
SYNC.-INSERT
FM-MOD
LIN.-EMPH.
CLIP
CIC2870
MOS
PC74HC4053T
CIC2880
MOS
PC74HC4052T
CIC2950
AN3292S
IC2900
BA7021
CIC2915
M52055FP
IC2800
AN6308
IC2805
MOS
MC140948
TDK SDL4196
TDK SDL2234
TDK SEL4155
TOKO 2450
TOKO 2286
REC
PLAY
FBAS
Y
EE/YY
Y-PB
Y-ENC
SYN.
COMP
S6
CHROMA I
+5VF•
+5VW
+12VA
+12VF
VIDEO II
120589

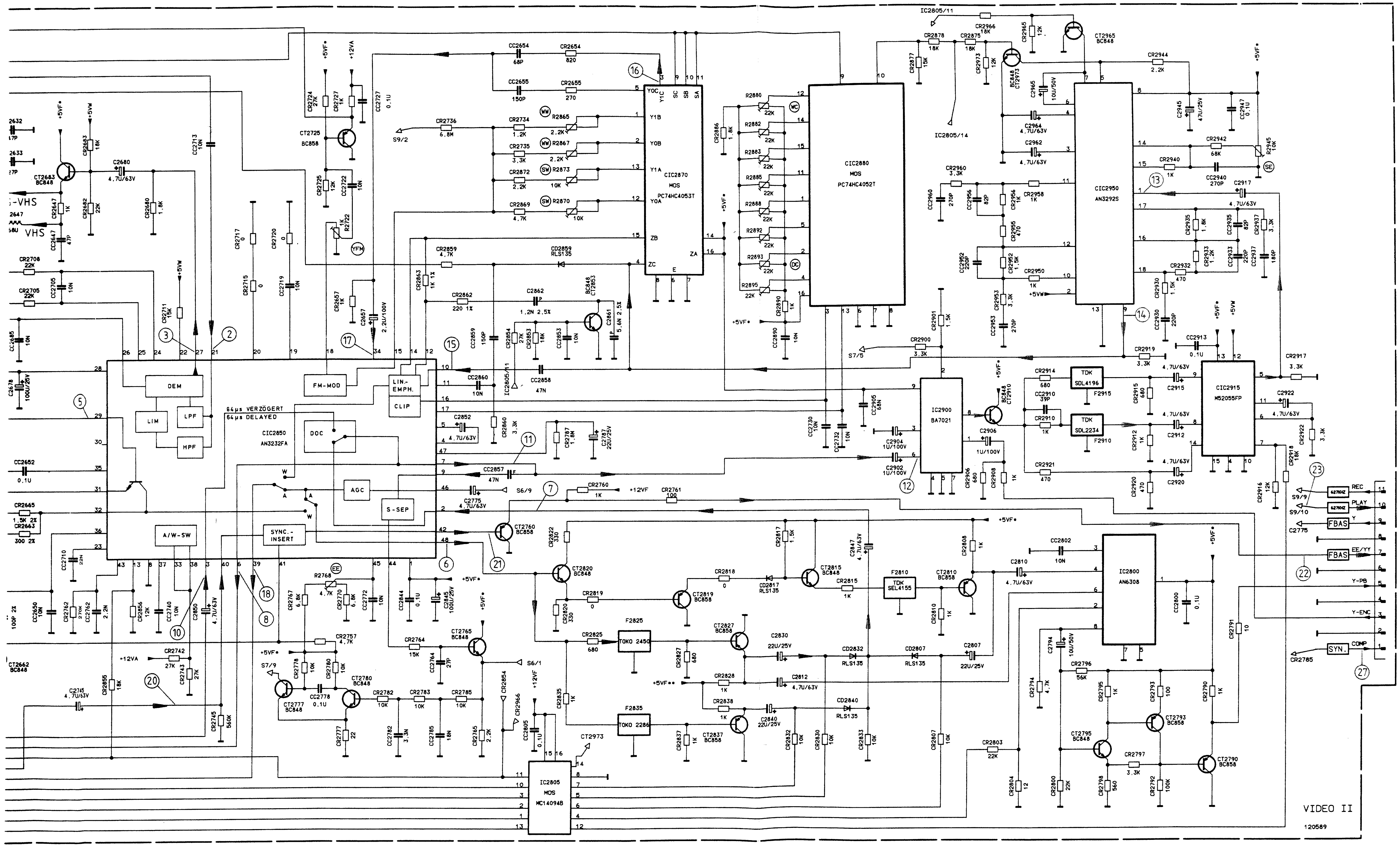

1,8 V
64 µs
0,8 Vss
⑦ 64 µs 5 Vss
⑧ 64 µs 4 Vss
⑨ 20 ms 5 Vss
⑩ 64 µs 2,7 V 0,8 Vss
⑪ 64 µs 3 V 0,4 Vss
⑫ 64 µs 2 V 0,4 Vss
⑬ 64 µs 1,7 V 1 Vss
⑭ 64 µs 2,2 V 1,1 Vss
⑮ 64 µs 2,2 V 1,1 Vss
⑯ 3,2 V 0,9 Vss 10 µs/cm
⑰ 2,5 V 0,5 Vss 10 µs/cm
⑱ 64 µs 2,2 V 0,8 Vss
⑲ 64 µs 1,3 V 0,8 Vss
⑳ 64 µs 2,5 V 0,8 Vss
㉑ 64 µs 2,3 V 2 Vss

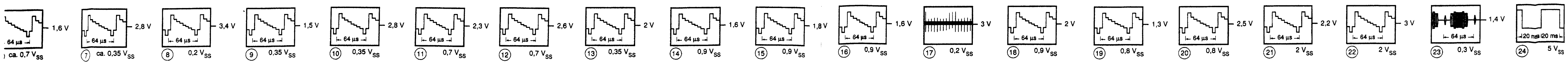

S10
VIDEO III
+5VF•
+5VW
+12VF
+12VA
HI UMPOLUNG/REVERSE
NC
FM V B
S7/4
S7/3
S9
H+V EINTAST./H+V INSERTION
-PLAY
-REC
DATA
CLOCK
STROBE
HI-B
OPT
S6/10
S6/11
S7
CHROMA II
CT2777
H-PULS(CH)
BOX
CR2900
S10/1
S10/2
S8
VIDEO I
Y VON/FROM DOC
Y ZU/TO DOC
Y VON/FROM CRISP
Y ZU/TO CRISP
IC2620
AN6308
S-VHS
VHS
CIC2850
AN3232FA
DEM
LIM
LPF
HPF
FM-MOD
LIN.-EMPH.
CLIP
DOC
AGC
S-SEP
A/W-SW
SYNC.-INSERT
64µs VERZÖGERT
64µs DELAYED
CIC2870
MOS
PC74HC4053T
Y0C
Y1C
SC
SB
SA
Y1B
Y0B
Y1A
Y0A
ZB
ZC
ZA
E
IC2805
MOS
MC14094B
TOKO 2450
TOKO 2286
F2825
F2835
S9/2
S6/9
S6/1
S7/9
CT2973
BC848
BC858
BFS20
RLS135

**Wiedergabe (S-VHS / NP)**
**Playback (S-VHS / NP)**
**Riproduzione (S-VHS / NP)**



**Video 2**


CIC2850 AN3232FA
DEM
LIM
LPF
HPF
FM-MOD
LIN.-EMPH.
CLIP
64µs VERZÖGERT
64µs DELAYED
DOC
AGC
S-SEP
A/W-SW
SYNC.-INSERT
CIC2870 MOS PC74HC4053T
CIC2880 MOS PC74HC4052T
CIC2950 AN3292S
IC2900 BA7021
CIC2915 M52055FP
IC2800 AN6308
IC2805 MOS MC14094B
TDK SDL4196
TDK SDL2234
TDK SEL4155
TOKO 2450
TOKO 2286
F2915
F2910
F2810
F2825
F2835
CT2725 BC858
CT2683 BC848
CT2853 BC848
CT2965 BC848
CT2973 BC848
CT2910 BC848
CT2760 BC858
CT2820 BC848
CT2819 BC858
CT2815 BC848
CT2810 BC858
CT2827 BC858
CT2837 BC858
CT2765 BC848
CT2777 BC848
CT2780 BC848
CT2795 BC848
CT2793 BC858
CT2790 BC858
CT2662 BC848
S-VHS
VHS
S9/2
S7/5
S7/9
S6/1
S6/9
S9/9
S9/10
C2775
CR2785
IC2805/11
IC2805/14
+5VF•
+5VW
+12VA
+12VF
REC
PLAY
Y
FBAS
EE/YY
Y-PB
Y-ENC
SYN.
COMP
S6
CHROMA I
VIDEO II
120589


1,6 V
64 µs
ca. 0,7 V_SS
⑦ ca. 0,35 V_SS 2,8 V
⑧ 0,2 V_SS 3,4 V
⑨ 0,35 V_SS 1,5 V
⑩ 0,35 V_SS 2,8 V
⑪ 0,7 V_SS 2,3 V
⑫ 0,7 V_SS 2,6 V
⑬ 0,35 V_SS 2 V
⑭ 0,9 V_SS 1,6 V
⑮ 0,9 V_SS 1,8 V
⑯ 0,9 V_SS 1,6 V
⑰ 0,2 V_SS 3 V
⑱ 0,9 V_SS 2 V
⑲ 0,8 V_SS 1,3 V
⑳ 0,8 V_SS 2,5 V
㉑ 2 V_SS 2,2 V
㉒ 2 V_SS 3 V
㉓ 0,3 V_SS 1,4 V
㉔ 5 V_SS
20 ms 20 ms

**Video 2**

## D Video 3

### 1. Aufnahme

**VHS-Aufnahme**

Bei VHS-Aufnahme gelangt das FM-Signal vom Video-Baustein 2 über S 10-5, den Verstärker CT 3260, das VHS-Bandpaß-Filter und den Koppelkondensator CC 3265 zum Emitterfolger CT3265. Dieser steuert über CC 3285/CR 3285 die LP-Aufnahme-Endstufe und über CC 3337/CR 3337 die NP-Aufnahme-Endstufe an.

Bei NP gelangt das FM-Signal über den Verstärkertransistor CT 3350, an dessen Basis das Chromasignal zum FM-Signal addiert wird, den Aufsprechtransistor T 3365, Diode CD 3365 und Steckerkontakt KB 1-2 zum Kopfverstärker. Der Transistor CT 3355 schaltet die Endstufe bei Assembly oder LP-Aufnahme ab. Dazu wird er entweder über CR 3357 vom Befehl $\overline{U}$↓ WR-V, der am Steckerkontakt S9-5 ansteht, oder über CR 3358 und IC 3005-(14) angesteuert.

Bei LP gelangt das FM-Signal über den Verstärkertransistor CT 3290, an dessen Basis das Chromasignal zum FM-Signal addiert wird, den Aufsprechtransistor T 3292, Diode CD 3292 und Kontakt KB 1-1 zum Kopfverstärker. Der Transistor CT 3297 schaltet die Endstufe bei Assembly oder NP-Aufnahme ab. Dazu wird er entweder über CR 3301 vom Befehl $\overline{U}$↓ WR-V, der am Steckerkontakt S 9-5 ansteht, oder über CR 3300 und IC 3005-(13) angesteuert.

**S-VHS-Aufnahme**

Bei S-VHS-Aufnahme gelangt das FM-Signal wie bei VHS-Aufnahme vom Video-Baustein 2 über S 10-5 in den Video-Baustein 3. Über den Verstärker CT 3325, einen Bandpaß, CC 3343 und CC 3330 leitet man es dem Emitterfolger CT 3333 zu. Dieser steuert über CC 3337/CR 3337 die NP-Aufnahme-Endstufe und über CC 3285/CR 3285 die LP-Aufnahme-Endstufe an. Die Steuerung der Aufnahmeendstufen erfolgt wie bei VHS-Aufnahme.

**Q-VHS-Aufnahme**

(VHS-Aufnahme mit S-VHS-Cassette)

Bei Q-VHS-Aufnahme gelangt das FM-Signal ebenfalls über S 10-5 in den Videobaustein 3. Über den Verstärker CT 3305, einen Bandpaß, CC 3320 und CC 3311 leitet man es dem Emitterfolger CT 3315 zu. Dieser steuert über CC 3337/CR 3337 die NP-Aufnahme-Endstufe und über CC 3285/CR 3285 die LP-Aufnahme-Endstufe an. Die Steuerung der Aufnahmeendstufen erfolgt wie bei VHS-Aufnahme.

Die Umschaltung VHS/S-VHS/Q-VHS erfolgt durch IC 3005. Bei VHS-Betrieb steht an IC 3005-(4) ein High-Pegel, der über CR 3266 die Basisspannung für CT 3265 bildet. Bei S-VHS-Betrieb versorgt IC 3005 über Pin 6 und CR 3332 den Emitterfolger CT 3333 mit der erforderlichen Basisspannung und über IC 3005-(5) und CR 3313 bei Q-VHS den Emitterfolger CT 3315.

### 2. Wiedergabe

Bei Wiedergabe steht das geregelte FM-Signal vom Kopfverstärker an KB 1-9 für die BAS-Signalverarbeitung. Das ungeregelte FM-Signal für die Chromasignalverarbeitung bei VHS- und S-VHS wird dem Video-Baustein 3 über KB 1-7 zugeführt. Der für die Kopfumschaltung erforderliche HI-Impuls gelangt über S 9-2 und KB 1-8 zum Kopfverstärker. An KB 1-4 liefert der Kopfverstärker eine Information, die aussagt, welcher Kopf (LP-oder NP-Köpfe) bei Bildsuchlauf oder Standbild mehr FM-Spannung liefert. Diese Information wird zum einen CIC 3150-(1), -(13) und zum anderen dem Videobaustein 2 über S 9-3 zugeführt.

## GB Video 3

### 1. Record

**VHS record**

On VHS-Record the FM signal is fed from the Video Module 2 via S 10-5 to the amplifier CT 3260, the VHS band pass Filter and the coupling capacitor CC 3265 to the emitter follower CT 3265. This drives the LP record output stage via CC 3285/CR 3285 and the NP record output stage via CC 3337/CR 3337.

On NP the FM signal is fed via the amplifying transistor CT 3350, on the base of which the Chroma signal is added to the FM signal, the record transistor T 3365, diode CD 3365 and the plug contact KB 1-2 to the Head Amplifier. The transistor CT 3355 switches the output stage off on Assembly or LP record. For this switching either the Command $\overline{U}$↓ WR-V from CR 3357, which is present on the plug contact S 9-5, or that via CR 3358 is effective.

On LP the FM signal is fed via the amplifying transistor, on the base of which the Chroma signal is added, the record transistor T 3292, diode CD 3292 and contact KB 1-1 to the Head Amplifier. The transistor T 3297 switches the output stage off on Assembly or NP record. For this either the command $\overline{U}$↓ WR-V from CR 3301, which is present on the plug contact S 9-5, or the command via CR 3300 and IC 3005-(13) is effective.

**S-VHS Record**

On S-VHS record the FM signal is fed, in a similar way as in VHS record, from the Video Module 2 and S 10-5 into the Video Module 3. The signal passes through the amplifier CT 3325, a band pass filter, CC 3343 and CC 3330 to the emitter follower CT 3333. This drives the NP record output stage via CC 3337 / CR 3337 and the LP record stage via CC 3285 / CR 3285. The drive to the record output stages is the same as for VHS record.

**Q-VHS Record**

(VHS recording with S-VHS cassettes)

On Q-VHS record the FM signal is fed also via S 10-5 to the Video Module 3. From the amplifier CT 3305, a band pass filter CC 3320 and CC 3311 the signal is fed to the emitter follower CT 3315. This drives the NP record output stage via CC 3337 / CR 3337 and the LP record stage via CC 3285 / CR 3285. The drive to the record output stages is the same as for VHS record.

The switchover between VHS / S-VHS / Q-VHS is carried out by IC 3005. On VHS-Mode a High Level is present on IC 3005-(4) which forms the base voltage for CT 3265 via CR 3266. On S-VHS mode the IC 3005 provides the emitter follower CT 3333 with the appropriate base voltage from Pin 6 and CR 3332, and to the emitter follower CT 3315 from IC 3005-(5) and CR 3313 on Q-VHS.

### 2. Playback

On playback the automatic gain controlled FM-Signal from the Head Amplifier is fed from KB 1-9 for CVS signal processing. The uncontrolled FM-Signal for Chroma signal processing on VHS- and S-VHS is fed to the Video Module 3 via KB 1-7. For the Head switching the required HI-Pulse is fed in from S 9-2 and KB 1-6 to the Head Amplifier. On KB 1-4 the Head Amplifier provides the information to indicate which Head (LP or NP Heads) is producing the most FM voltage on Picture Search or Freeze Frame. This information is fed, in one path to CIC 3150-(1), -(13) and, in another path, to the Video Module 2 via S 9-3. Switching of the Head Amplifier is carried out from KB 1-3

## I Video 3

### 1. Registrazione

**Registrazione VHS**

In registrazione VHS, il segnale FM proveniente dal modulo video 2 scorre attraverso S 10-5, l'amplificatore CT3260, il filtro passabanda VHS ed il condensatore d'accoppiamento CC 3265; infine esso giunge all'inseguitore d'emettitore CT 3265 che comanda lo stadio finale di registraz. Long-Play tramite CC 3285/CR 3285 e lo stadio per la registraz. Normal-Play per mezzo di CC 3337/CR 3337. In Normal-Play, il segnale FM percorre il transistor di amplificaz. CT 3350, alla base del quale questo segnale si aggiunge a quello croma, il transistor di registraz. T 3365, il diodo CD 3365 ed il contatto KB 1-2 del connettore e successivamente approda all'amplificatore testine. Il transistor CT 3355 disattiva lo stadio finale in Assembly o registrazione LP. A tale scopo esso viene comandato attraverso CR 3357 dall'ordine $\overline{U}$↓ WR-V , che si trova al contatto S 9-5 del connettore, oppure attraverso CR3358 ed IC 3005-(14).

In Long-Play, il segnale FM giunge all'amplificatore testine mediante il transistor di amplificazione CT 3290, alla base del quale si somma al segnale croma, il transistor di registrazione T 3292, il diodo CD 3292 ed il contatto KB 1-1. Il transistor CT 3297 esclude lo stadio finale in Assembly o registrazione NP. Per questo motivo esso viene comandato attraverso CR 3301 dall'ordine $\overline{U}$↓ WR-V , che è presente al contatto S 9-5 del connettore, oppure per mezzo di CR 3300 ed IC 3005-(13).

**Registrazione S-VHS**

In registrazione S-VHS, il segnale FM proveniente come in VHS dal modulo video 2 raggiunge il modulo video 3 per mezzo di S 10-5. Tramite l'amplificatore CT 3325, un passabanda, CC 3343 e CC 3330, tale segnale viene inviato all'inseguitore d'emettitore CT 3333. Questo comanda lo stadio finale di registrazione NP mediante CC 3337/CR 3337 e lo stadio di registrazione LP attraverso CC 3285/CR 3285. Il pilotaggio degli stadi finali di registraz. avviene come descritto in registrazione VHS.

**Registrazione Q-VHS**

(Registrazione VHS con cassetta S-VHS)

Anche in tal caso il segnale FM giunge al modulo video 3 per mezzo di S 10-5. Tramite l'amplificatore CT 3305, un passabanda, CC 3320 e CC 3311, esso perviene all'inseguitore d'emittore CT 3315. Questo comanda lo stadio finale di registrazione NP con l'impiego di CC 3337/CR 3337 e lo stadio per la registrazione LP mediante CC 3285/CR 3285. Il pilotaggio degli stadi finali di registrazione avviene come per la registrazione VHS.

La commutazione VHS/S-VHS/Q-VHS avviene attraverso l'integrato IC 3005. In funzionamento VHS, in IC 3005-(4) si trova un livello High che tramite CR 3266 forma la tensione di base per CT 3265. In funzionamento S-VHS, mediante il pin 6 e CR 3332 l'IC 3005 alimenta l'inseguitore d'emettitore CT 3333 con la tensione di base necessaria e tramite IC 3005-(5) e CR 3313 per Q-VHS l'inseguitore d'emettitore CT 3315.

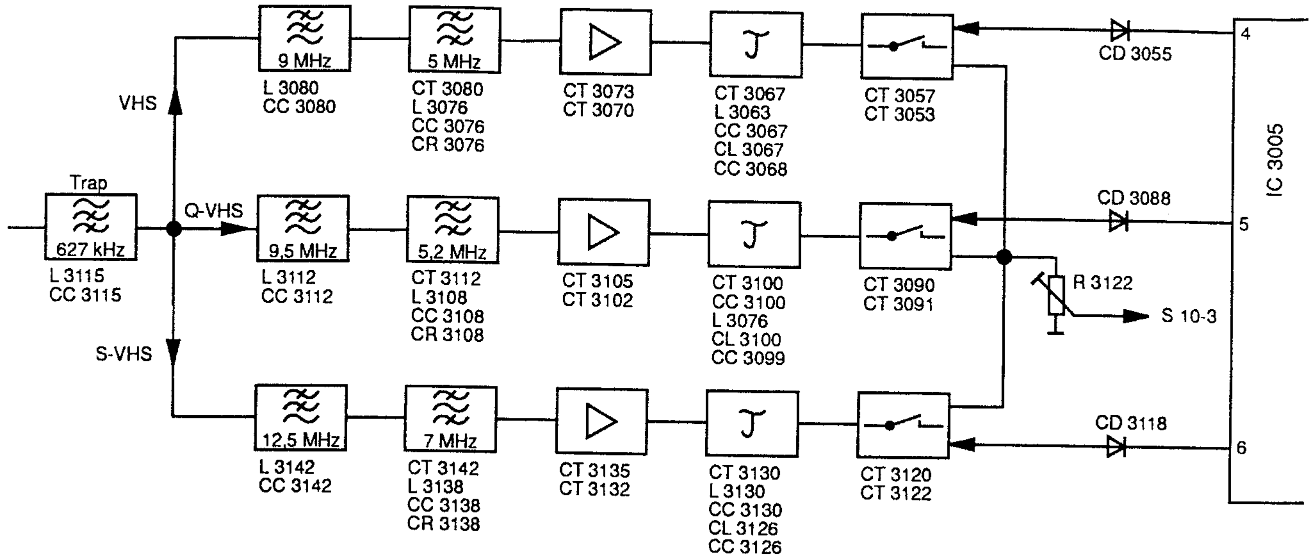
### 2. Riproduzione

In riproduz., il segnale FM regolato passa dall'amplificatore testine a KB 1-9 per l'elaboraz. del segnale BAS. Il segnale FM non regolato per la preparaz. del segnale croma in VHS e S-VHS viene inviato al modulo video 3 attraverso KB 1-7. L'impulso HI necessario per la commutaz. testine giunge mediante S9-2 e KB 1-8 all'amplificatore testine. Su KB 1-4, l'amplificatore testine dà un'informaz. con la quale si in-

Über KB 1-3 erfolgt die Umschaltung des Kopfverstärkers von NP (Low) auf LP (High). Von KB 1-9 leitet man das FM-Signal über den Chromasperrkreis L 3115/CC 3115 und den Emitterfolger CT 3115 drei gleichartigen Schaltungen (VHS, Q-VHS, S-VHS) zu, deren Funktionen aus nachfolgendem Blockschaltplan ersichtlich sind. Über den Emitterfolger CT 3053 (VHS) oder CT 3091 (Q-VHS) oder CT 3122 (S-VHS), den Einsteller R 3122 und S10-3 gelangt das FM-Signal zum Videobaustein 2.

between NP (Low) and LP (High). The FM signal is fed from KB 1-9 through the Chroma trap circuit L 3115 / CC 3115 and the emitter follower CT 3115 through three similar circuits (VHS, Q-VHS, S-VHS) the functions of which are indicated in the following block circuit diagram. From the emitter follower CT 3053 (VHS) or CT 3091 (Q-VHS) or CT 3122 (S-VHS), the preset R 3122 and S 10-3 the FM signal is fed to the Video Module 2.

dividua quale testina (LP o NP) fornisce più tensione FM in ricerca o in fermo immagine. Questa informaz. viene da una parte inviata a CIC 3150-(1), -(13) e dall'altra al modulo video 2 attraverso S 9-3. Tramite KB 1-3 ha luogo la commutaz. dell'amplificatore testine da NP (LOW) in LP (HIGH). Da KB 1-9 si conduce il segnale FM, attraverso il circuito trappola del segn. croma L 3115/CC 3115 e l'insiguitore d'emettitore CT 3115, a tre circuiti analoghi (VHS, Q-VHS, S-VHS), le cui funzioni sono rilevabili dallo schema in basso. Attraverso l'inseguitore d'emettitore CT 3053 (VHS), CT 3091 (Q-VHS) o CT 3122 (S-VHS), il regolatore R 3122 e S 10-3, il segnale FM appare nel modulo video 2.



Die Umschaltung der 3 Signalwege erfolgt durch IC 3005 über die aus dem Blockschaltplan ersichtlichen Dioden.

The switching over of the three signal paths is carried out by IC 3005 from the diodes indicated in the block circuit diagram.

La commutazione dei 3 percorsi del segnale viene svolta da IC 3005, grazie ai diodi illustrati nello schema a blocchi.

| | IC 3005-(4) | IC 3005-(5) | IC 3005-(6) |
|---|---|---|---|
| VHS | H | H | L |
| Q-VHS<br>(Modified VHS) | H | L | H |
| S-VHS | L | H | L |

Die Ansteuerung des IC 3005 erfolgt an den Pins 1, 2, 3 über die Steckerkontakte S 9-6, S 9-7 und S 9-8.
Das ungeregelte FM-Signal gelangt einmal über das Chromafilter, wo das 627kHz-Chromasignal gewonnen wird, die Verstärkerstufe CT 3020/CT 3025, den Steckerkontakt S 9-9 und den Videobaustein 2 zum Chromabaustein. Zum anderen leitet man das ungeregelte FM-Signal den Transistoren CT 3033 und CT 3045 zu. Am Kollektor des CT 3033 liegt ein auf 3,8 MHz abgeglichener Resonanzkreis (L 3035, CC 3035). Das FM-Signal (3,8 MHz) wird verstärkt (CT 3033), gleichgerichtet (CT 3035), nochmals verstärkt (CT 3040), anschließend gesiebt (C 3040) und der Ablaufsteuerung II zur VHS-Erkennung über S 10-1, Videobaustein 2 und Chromabaustein zugeführt.
Der Signalweg über CT 3045 ist wie der über CT 3033 ausgelegt. Zusätzlich zu dem am Kollektor angeschlossenenen 5,9 MHz-Resonanzkreis liegt ein weiterer Resonanzkreis am Emitter des CT 3045. Die über CT 3047, CT 3052, C 3052 gewonnene Gleichspannung führt man über S 10-2, den Videobaustein 2 und den Chromabaustein der Ablaufsteuerung II zur S-VHS-Erkennung zu.

The control of the IC 3005 is carried out on Pins 1, 2, 3 from the plug contacts S 9-6, S 9-7 and S 9-8.
The uncontrolled FM-Signal is fed in one path through the Chroma filter, in which the 627 kHz Chroma signal is obtained, the amplifier stage CT 3020 / CT 3025, the plug contact S 9-9 and the Video Module 2 to the Chroma Module. In the other path the uncontrolled FM signal is fed to the transistors CT 3033 and CT 3045. At the collector of CT 3033 an adjustable 3.8 MHz resonance circuit (L 3035, CC 3035) is connected. The FM-signal (3.8MHz) is amplified (CT 3033), rectified (CT 3035), amplified again (CT 3040), subsequently filtered (C 3040) and then fed to the Sequence Control II for VHS identification via S 10-1, Video Module 2 and the Chroma Module.
The signal path from CT 3045 is the same as via CT 3033. In addition to the 5.9 MHz circuit another resonance circuit is connected to the emitter of CT 3045. The DC voltage obtained via CT 3047, CT 3052, C 3052 is fed via S 10-2, the Video Module 2 and the Chroma Module to the Sequence control II and used for S-VHS identification.

Il pilotaggio dell'integrato avviene ai pin 1, 2, 3 attraverso i contatti S 9-6, S 9-7 e S 9-8 del connettore.
Il segnale FM non regolato giunge al modulo croma attraverso un filtro, dove viene ottenuto il segnale croma 627kHz, lo stadio amplificatore CT 3020/CT 3025, il contatto S 9-9 del connettore ed il modulo video 2. Contemporaneamente esso viene fornito ai transistor CT 3033 e CT 3045. Al collettore di CT 3033 si trova un circuito di risonanza tarato a 3,8MHz (L 3035, CC 3035). Il segnale FM (3,8MHz) viene amplificato (CT 3033), raddrizzato (CT 3035), nuovamente amplificato (CT 3040), infine filtrato (C 3040) ed inviato al mod. comando funz. II per il riconoscimento VHS mediante S 10-1, il mod. video 2 ed il mod. croma.
Il percorso del segnale attraverso CT 3046 corrisponde a quello di CT 3033. In aggiunta al circuito di risonanza da 5,8MHz collegato al collettore, ne esiste un'altro sull'emettitore di CT 3045. La tensione continua attenuta per mezzo di CT 3047, CT 3052, C 3052 arriva ad S 10-2, ai moduli video ed audio e successivamente al comando funz. II per l'identificazione S-VHS.

## D Abgleich (Video 3)

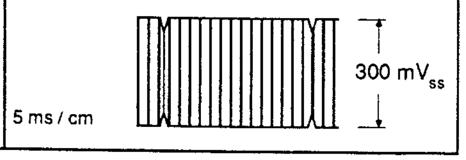
**Meßgeräte :**
Oszilloskop, Tastkopf 10 : 1
**Servicearbeiten nach Bausteinwechsel:**
Abgleich

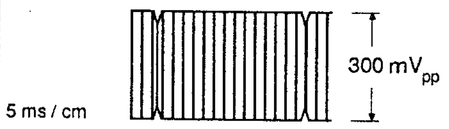
## GB Adjustment (Video 3)

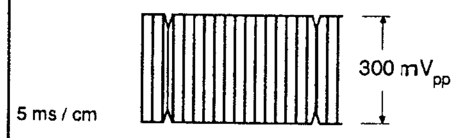
**Test equipment:**
Oscilloscope, 10 : 1 probe
**Servicing work after changing board:**
Adjustment

## I Taratura (Video 3)

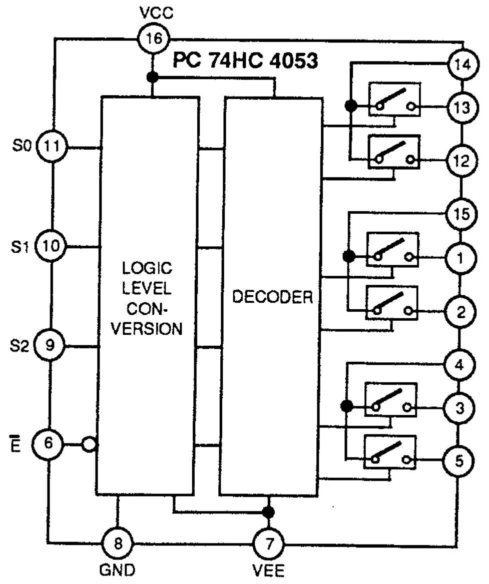
**Strumenti :**
Oscilloscopio, sonda 10 : 1
**Lavori da eseguire dopo la sostituzione del modulo:** taratura

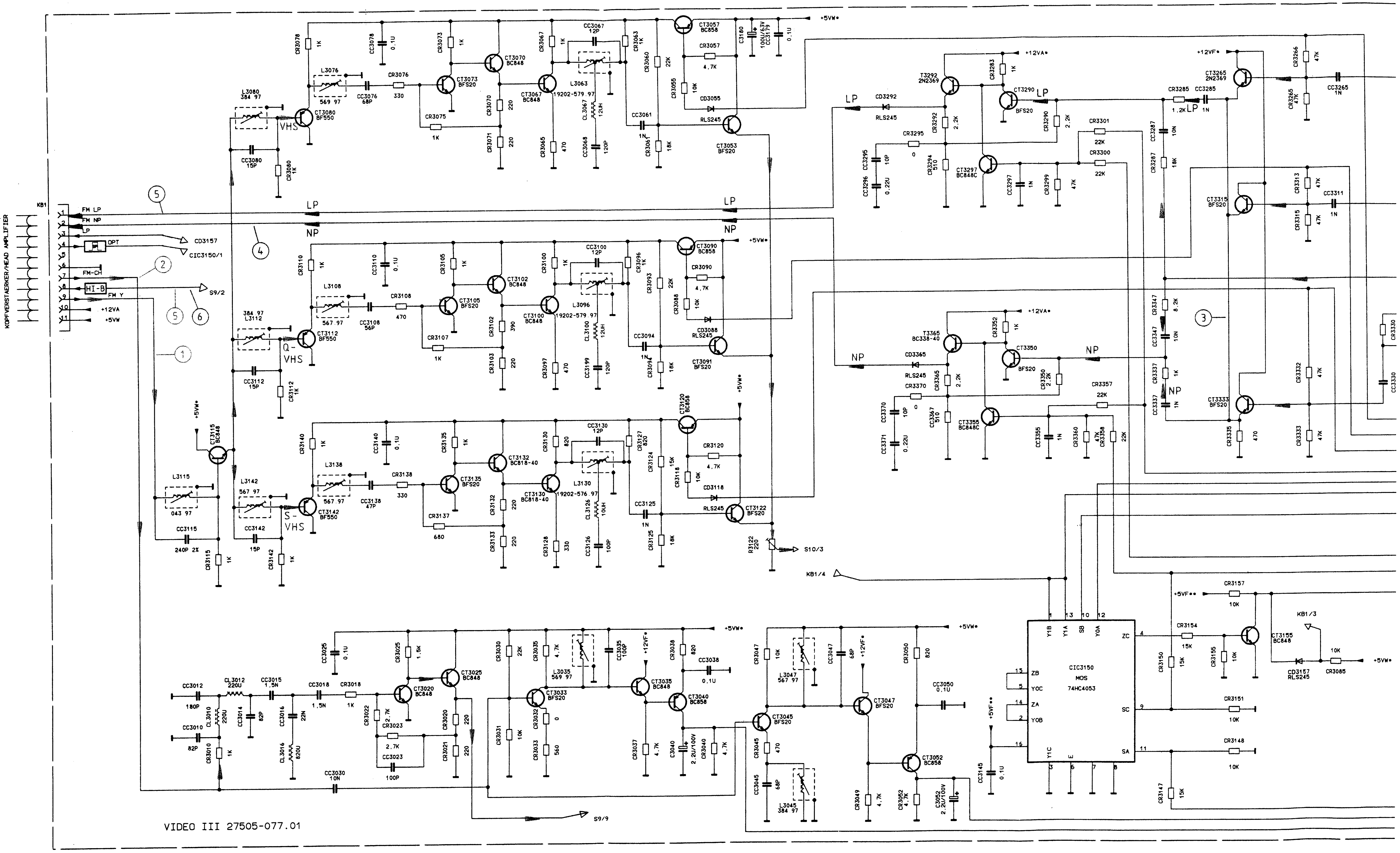
| D Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| FM - Amplitude | Oszilloskop:<br>Kontakt S 10-3<br>Trigger: S 9-2 | Testcassette wiedergeben | R 3122 |  |

| GB Adjustment | Preparation | Cassette Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| FM amplitude | Oscilloscope:<br>Contact S 10-3<br>Trigger: S 9-2 | Playback the test cassette | R 3122 |  |

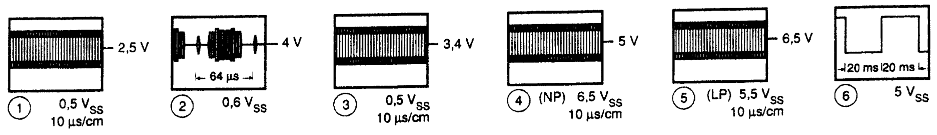
| I Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| Ampiezza di FM | Oscilloscopio:<br>Contatto S 10-3<br>Trigger: S 9-2 | Riprodurre la cassetta campione | R 3122 |  |

### PC 74 HC4053 (CIC 3150)

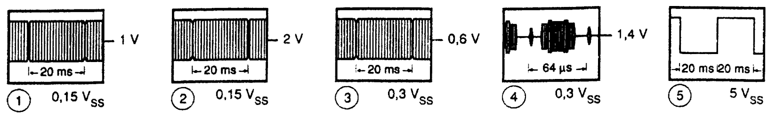



KOPFVERSTAERKER/HEAD AMPLIFIER
KB1
FM LP
FM NP
LP
OPT
FM-CH
HI-B
FM Y
+12VA
+5VW
CD3157
CIC3150/1
S9/2
LP
NP
VHS
Q-VHS
S-VHS
CT3080 BF550
CT3073 BFS20
CT3070 BC848
CT3067 BC848
CT3057 BC858
CT3053 BFS20
CT3112 BF550
CT3105 BFS20
CT3102 BC848
CT3100 BC848
CT3090 BC858
CT3091 BFS20
CT3115 BC848
CT3142 BF550
CT3135 BFS20
CT3132 BC818-40
CT3130 BC818-40
CT3120 BC858
CT3122 BFS20
S10/3
KB1/4
T3292 2N2369
CT3290 BFS20
CT3297 BC848C
CT3265 2N2369
CT3315 BFS20
T3365 BC338-40
CT3350 BFS20
CT3355 BC848C
CT3333 BFS20
CT3020 BC848
CT3025 BC848
CT3033 BFS20
CT3035 BC848
CT3040 BC858
CT3045 BFS20
CT3047 BFS20
CT3052 BC858
CT3155 BC848
CD3157 RLS245
KB1/3
S9/9
CIC3150 MOS 74HC4053
+12VA•
+12VF•
+5VF••
VIDEO III 27505-077.01

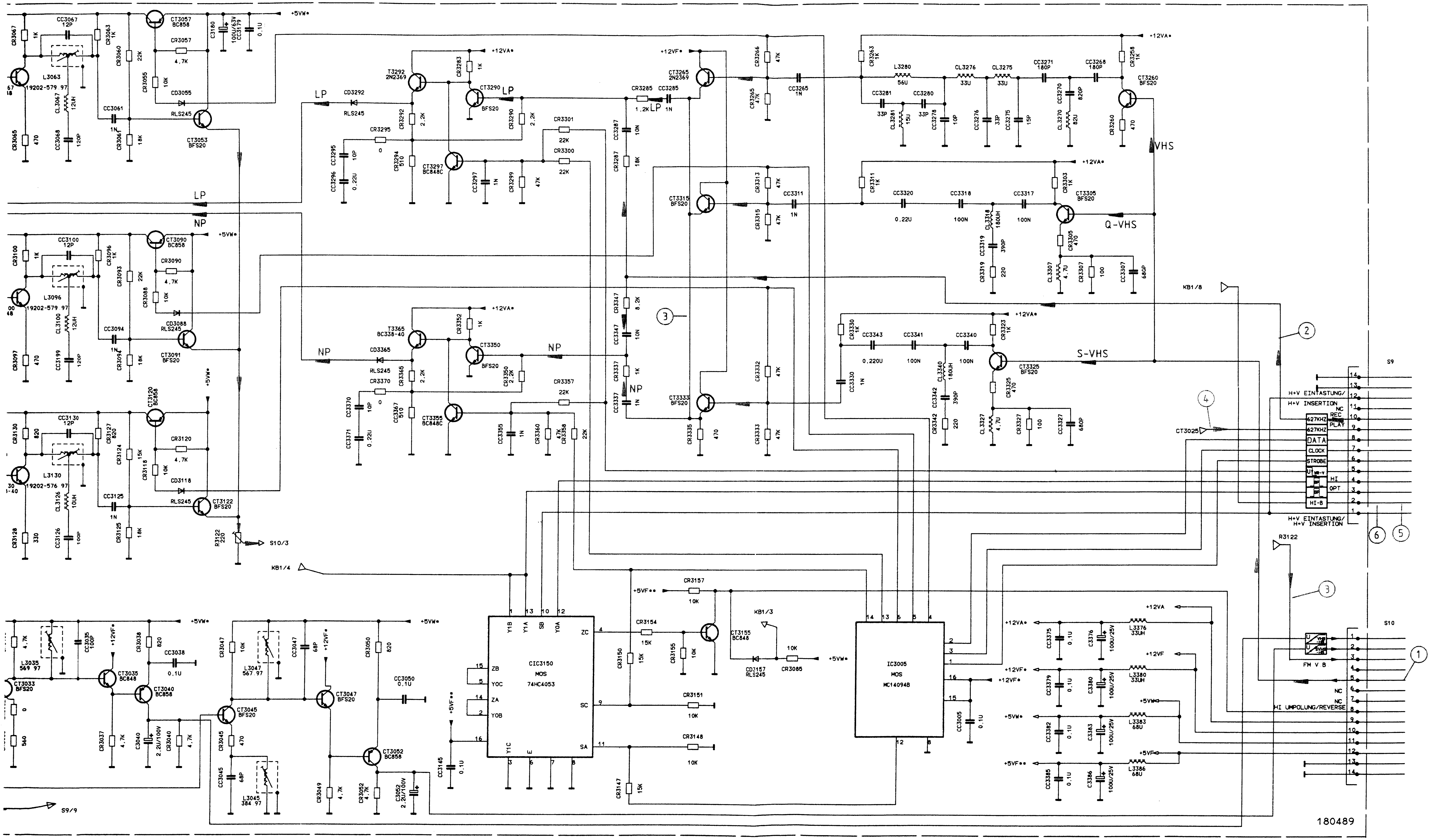
Aufnahme (S-VHS) - HF
Record (S-VHS) - RF
Registrazione (S-VHS) - AF



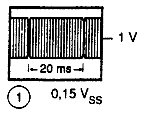
Wiedergabe (S-VHS / NP)
Playback (S-VHS / NP)
Riproduzione (S-VHS / NP)



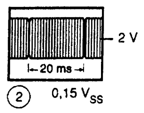
**Video 3**


+5VW•
+12VA•
+12VF•
LP
NP
VHS
Q-VHS
S-VHS
CT3057 BC858
CT3053 BFS20
T3292 2N2369
CT3290 BFS20
CT3297 BC848C
CT3265 2N2369
CT3260 BFS20
CT3315 BFS20
CT3305 BFS20
CT3090 BC858
CT3091 BFS20
T3365 BC338-40
CT3350 BFS20
CT3355 BC848C
CT3333 BFS20
CT3325 BFS20
CT3120 BC858
CT3122 BFS20
CT3035 BC848
CT3040 BC858
CT3033 BFS20
CT3045 BFS20
CT3047 BFS20
CT3052 BC858
CT3155 BC848
CIC3150 MOS 74HC4053
IC3005 MOS MC14094B
L3063 19202-579 97
L3096 19202-579 97
L3130 19202-576 97
L3035 569 97
L3047 567 97
L3045 384 97
KB1/8
KB1/4
KB1/3
S10/3
S9/9
R3122
CT3025
S9
S10
H+V EINTASTUNG/ H+V INSERTION
627KHZ REC
627KHZ PLAY
DATA
CLOCK
STROBE
HI
OPT
HI-B
FM V B
HI UMPOLUNG/REVERSE
NC
VIDEO II
①
②
③
④
⑤
⑥
180489

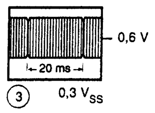
## Wiedergabe (S-VHS / NP)
## Playback (S-VHS / NP)
## Riproduzione (S-VHS / NP)



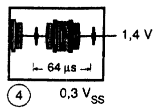
① 0,15 $V_{SS}$



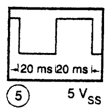
② 0,15 $V_{SS}$



③ 0,3 $V_{SS}$



④ 0,3 $V_{SS}$

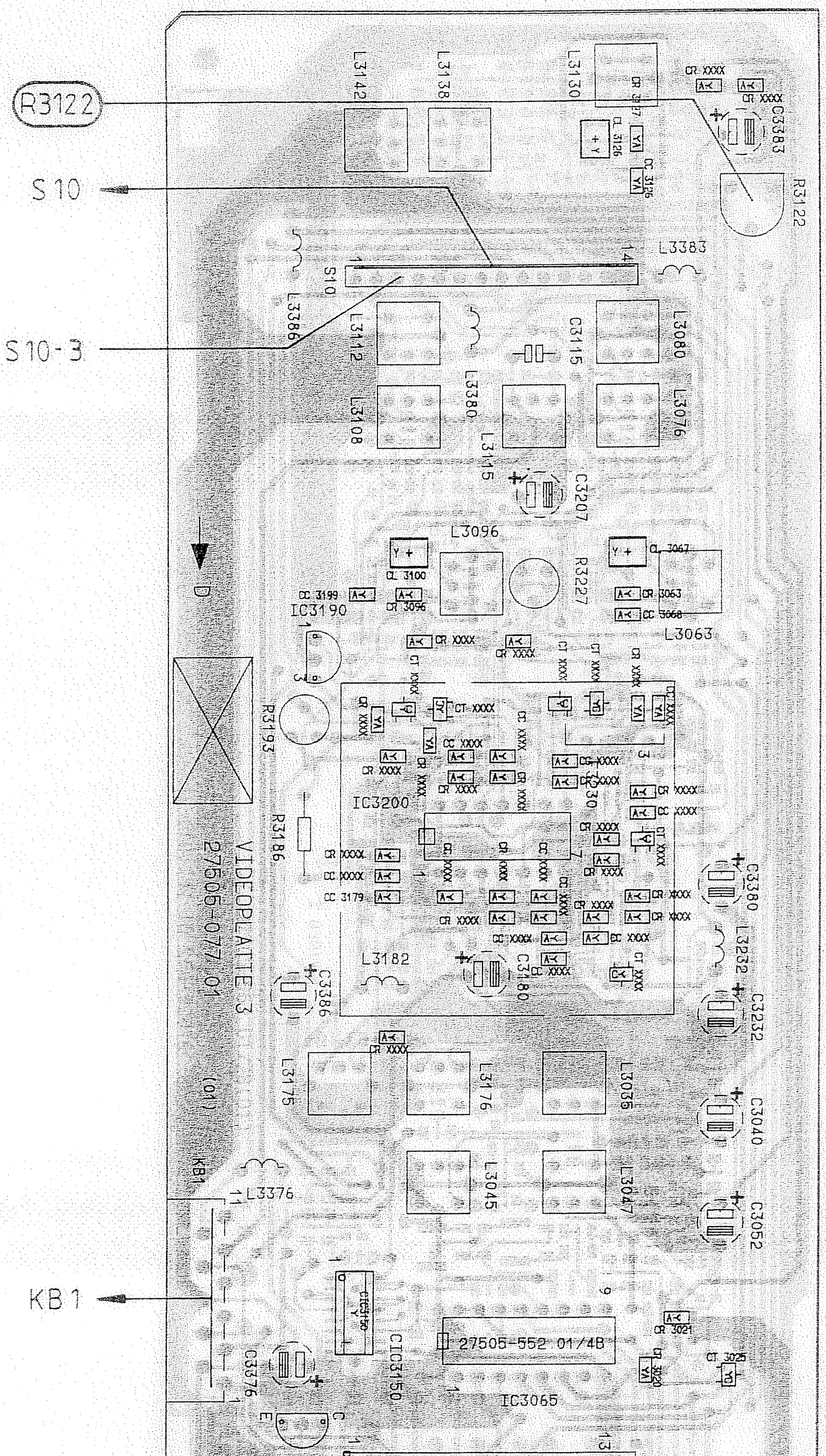


⑤ 5 $V_{SS}$

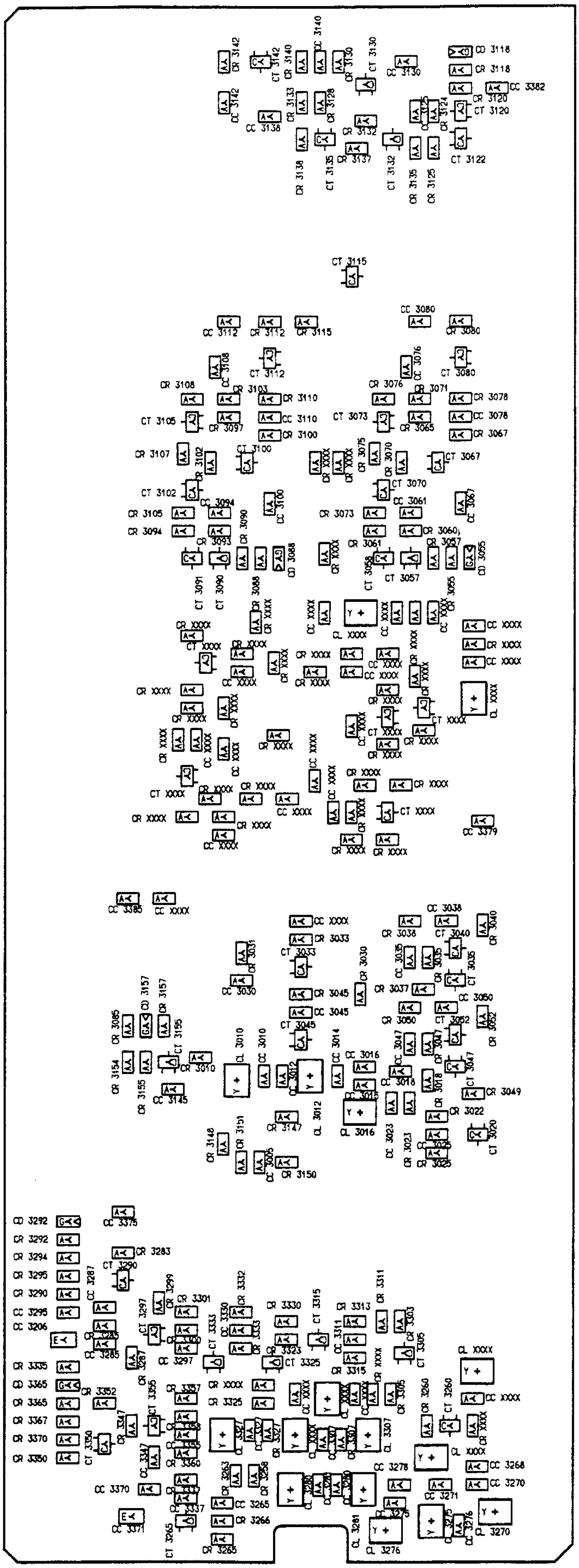
## Video 3

## Video 3

KB 1 - Kopfverstärker / Head amplifier / Amplificatore testina
S 9 - Video 2
S 10 - Video 2


R3122
S 10
S 10-3
KB 1
S 9
VIDEOPLATTE 3
27505-077.01
(01)
L3142
L3138
L3130
C3383
L3383
L3386
L3112
C3115
L3080
L3380
L3108
L3115
L3076
C3207
L3096
R3227
L3063
IC3190
R3193
IC3200
R3186
C3380
L3232
C3232
L3182
C3180
C3386
L3175
L3176
L3036
C3040
L3376
L3045
L3047
C3052
CIC3150
27505-552 01/4B
IC3065
C3376
TS292
TS365
D

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



## D Chroma

Der Chromabaustein besteht aus folgenden Funktionseinheiten:

1. Wahlschalter für Eingangsbuchsen EURO-AV 1, Cinch, S-VHS 1, S-VHS 2 und für die ZF (CT 2153, CT 2155, CT 2157, CT 2183, CT 2185, CT 2192, CT 2215, CT 2217, CT 2223, CT 2238, CT 2240, CT 2242, CIC 2175, CIC 2245 und diverse Schaltdioden). Er verwaltet die Signalverarbeitung bei Aufnahme und beim Durchschleifbetrieb (EE). Außerdem versorgt er bei Bedarf den Bildspeicher mit dem entsprechenden Signal für MAIN CHANNEL und SUB CHANNEL, woraus z.B. ein einblendbares Kleinbild entsteht. Die Steuerung erfolgt über einen seriellen Bus.
2. Ausgangstreiber und Umschaltung für die Ausgangsbuchsen S-VHS, EURO-AV und den Modulator (CIC 2030, IC 2055, IC 2065). Die Steuerung erfolgt über einen seriellen Bus.
3. PAL-Encoder für Texteinblendungen, Textaufnahme und Bildeffekte (IC 1880). Die Steuerung erfolgt über einen seriellen Bus.
4. Umschaltung bei Aufnahme zwischen Hauptbild und Texteinblendung (IC 2065 / IC 2035). Die Steuerung erfolgt über den Blanking-Impuls.
5. Chromasignalverarbeitung (CIC 1430). Die Steuerung des CIC 1430 erfolgt über einen seriellen Bus.
6. Kopfhörerverstärker (IC 2130)

**Allgemeines:**
Die Aufzeichnungsnormen VHS und S-VHS sind, bezogen auf die Chromaverarbeitung, gleich. Jedoch tritt bei S-VHS zusätzlich der "Pilot-Burst" auf, der eine Kennung darstellt und während der Zeit des H-Impulses aufgezeichnet wird.

**HF-Aufnahme (Prinzip)**
Das FBAS-Signal vom ZF-Baustein gelangt über den Kontakt S2-4 in den Chromabaustein. Hier teilt es sich im Eingangswahlschalter in den Zweig für den Bildspeicher (CT 2155) und in den Hauptkanal –MAIN CHANNEL– (CT 2238). Vom CT 2238 durchläuft das FBAS-Signal die Bauteile CD 2238 / CD 2237 /CT 2220/ CT 2205 / CT 2212 und wird anschließend über Kontakt S 6-9 dem Videobaustein 2 (CIC 2850) zugeführt. Des weiteren leitet man es über CD 2238 / CD 2235 / CT 2250 / CD 2252 / CT 2260 dem CIC 1430-(48) zu. Das im Videobaustein 2 ausgeregelte FBAS-Signal gelangt über S 6-7 zu den Pins 1 und 9 des CIC 2030. Vom Pin 9 wird es nach Pin 6 geschaltet und über CT 2082, F 2084, CT 2085 und S 2-2 dem Modulator zugeführt. Für die Versorgung der EURO-AV-Buchse 1 schaltet man das von CIC 2030-(6) an CIC 2030-(11) stehende FBAS-Signal nach Pin 5 durch und leitet es über den Emitterfolger T 2015 dem Kontakt 19 zu.

**Chromasignalverarbeitung:**
Im CIC 1430 durchläuft das FBAS-Signal (oder das Chromasignal bei Eingang über S-VHS-Buchse), von Pin 48 kommend, einen Aufnahme-/Wiedergabeschalter und verläßt an Pin 46 das CIC. In einem Bandpass F 1493 senkt man den BAS-Signalanteil ab und leitet das Chromasignal über CIC 1430-(44) einem geregelten Aufnahmeverstärker zu. Von hier gelangt es über die Burstanhebung (+6dB), die bei PAL außer Betrieb ist, einen Aufnahme-/Wiedergabeschalter, Pin 40 und einen 8,8 MHz-Trap (CC 1615, L 1615) zum IC 1620-(4). Im IC 1620 wird bei eingeschalteter Texteinblendung das über IC 1880-(13), CT 1883, CT 1885 an IC 1620-(6) kommende Coder-Signal in das Hauptsignal

## GB Chroma

The Chroma Module consists of the following function groups:

1. Selection Switch for the Input Sockets EURO-AV 1, Cinch, S-VHS 1, S-VHS 2 and for the IF (CT 2153, CT 2155, CT 2157, CT 2183, CT 2185, CT 2192, CT 2215, CT 2217, CT 2223, CT 2238, CT 2240, CT 2242, CIC 2175, CIC 2245, and various switching diodes). It selects the signal processing on record and loop-through operation (EE). In addition, it provides the Field Store with the appropriate signal for the MAIN CHANNEL and SUB CHANNEL as required, when for example, a small picture has to be blended in. The control is carried out via a serial Bus.
2. Output driver and switchover for the output sockets S-VHS, EURO-AV and the Modulator (CIC 2030, IC 2055, IC 2065). The control is carried out via a serial Bus.
3. PAL-Encoder for blending in Text, recording Text and Picture Effects (IC 1880). The control is carried out via a serial Bus.
4. Switch over on record between the Main Picture and Text Blending in (IC 2065 / IC 2035). The control is carried out via the Blanking Pulse.
5. Chroma signal processing (CIC 1430). The control of the CIC 1430 is via a serial Bus.
6. Headphone Amplifier (IC 2130).

**General:**
The VHS and S-VHS recording standards, are similar as far as the Chroma processing is concerned. However, the "Pilot-Burst", which is used for S-VHS identification, is also recorded during the time of the horizontal pulse.

**RF Record (Principle)**
The CCVS signal from the IF Module is fed in from contact S 2-4 to the Chroma Module. The Input Selection Switch devides the signal into a path for the Field Store (CT 2155) and into a path for the Main Channel (CT 2238). The CCVS signal passes through the components CD 2238 / CD 2237 / CT 2220 / CT 2205 / CT 2212 and subsequently, from contact S 6-9, to the Video Module 2 (CIC 2850). In addition the signal is fed through CD 2238 / CD 2235 / CT 2250 / CD 2252 / CT 2260 to the CIC 1430-(48). The controlled CCVS signal from the Video Module is fed from S 6-7 to the pins 1 and 9 of CIC 2030. The signal from pin 9 is switched through to pin 6 and then applied via CT 2082 / F 2084 / CT 2085 and S 2-2 to the Modulator. For feeding a signal to the EURO-AV-Socket, the CCVS signal present on CIC 2030-(11) from pin 6 is switched through to pin 5 and it then passes through the emitter follower T 2015 to contact 19.

**Chroma Signal Processing:**
In CIC 1430 the CCVS signal from Pin 48 (or the Chroma Signal on inputs via the S-VHS-Socket), passes through a record / playback switch and leaves the CIC on Pin 46. In a Band Pass Filter F 1493 the CVS signals are suppressed and the Chroma signal is fed via CIC 1430-(44) to a gain controlled record amplifier. From here the signal is fed via a Burst lifting circuit (+6dB), which is not in operation on PAL, to a record/playback switch, Pin 40 and an 8.8 MHz trap (CC 1615, L 1615) to IC 1620-(4). In IC 1620, with Text blending in selected, the coder signal coming in via IC 1880-(13), CT 1883, CT 1885 to IC 1620-(6) is blended into the Main Signal. Without text blending in, the Chroma signal is switched through to IC 1620-(8). On S-VHS record, the Pilot-Burst fed via CR 1787 is added to the Chroma signal after

## I Croma

Il modulo croma è costituito dai seguenti gruppi di funzioni:

1. Selettore per prese d'ingresso EURO-AV 1, Cinch, S-VHS 1, S-VHS 2 e per FI (CT 2153, CT 2155, CT 2157, CT 2183, CT 2185, CT 2192, CT 2215, CT 2217, CT 2223, CT 2238, CT 2240, CT 2242, CIC 2175, CIC 2245 e vari diodi di commutazione). Esso è preposto alle preparazione del segnale in registrazione ed in funzionamente EE. Inoltre, in caso di necessità, fornisce alla memoria d'immagine il segnale per il MAIN CHANNEL ed il SUB CHANNEL (canale principale e secondario) da cui può venir ricavata per es. un'immagine piccola visualizzabile. Il comando avviene tramite il bus seriale.
2. Pilota d'uscita e commutatore per le prese d'uscita S-VHS, EURO-AV ed il modulatore (CIC 2030, IC 2055, IC 2065). Il comando avviene tramite il bus seriale.
3. Encoder Pal (codificatore) per visualizzazioni e registrazioni di testi e per effetti video speciali (IC 1880). Il comando è svolto dal bus seriale.
4. Commutazione in registrazione tra immagine principale e visualizzazione di testi (IC 2065 / IC 2035). Il comando è svolto dall'impulso Blanking.
5. Elaborazione del segnale croma (CIC 1430). Il comando del CIC 1430 avviene tramite il bus seriale.
6. Amplificatore cuffia (IC 2130).

**Generalità:**
Le norme di registrazione VHS e S-VHS sono identiche per quanto riguarda l'elaborazione del segnale croma. Tuttavia nel sistema S-VHS è presente anche il "burst pilota" che rappresenta un'identificazione e viene registrato durante il tempo di impulso H.

**Registrazione AF (principio)**
Il segnale FBAS proveniente dal modulo FI giunge al modulo croma attraverso il contatto S2-4. Nel selettore d'ingresso esso viene suddiviso ed inviato alla memoria d'immagine (CT 2155) ed al canale principale –MAIN CHANNEL– (CT 2238). Da CT 2238 il segnale FBAS percorre i componenti CD 2238 / CD 2237 / CT 2220 / CT 2205 / CT 2212 e viene poi condotto al modulo video 2 (CIC 2850) per mezzo del contatto S6-9. Inoltre esso giunge a CIC 1430-(48) attraverso CD 2238 / CD 2235 / CT 2250 / CD 2252 / CT 2260. Il segnale FBAS regolato nel modulo video 2 arriva tramite S6-7 ai pin 1 e 9 di CIC 2030. Da pin 9 esso viene commutato verso pin 6 e mediante CT 2082, F 2084, CT 2085 e S 2-2 si presenta al modulatore. Per l'alimentazione della presa SCART 1, il segnale FBAS passa da CIC 2030-(6) a CIC 2030-(11) e poi viene inoltrato verso il pin 5. Successivamente esso viene applicato al contatto 15 per mezzo dell'inseguitore d'emettitore T 2015.

**Elaborazione del segnale croma:**
Nel CIC 1430, il segnale FBAS (o segnale croma se arriva dalla presa S-VHS) proveniente dal pin 48, percorre un commutatore registr./riprod. e lascia l'integrato al pin 46. In un passabanda F 1493, il segnale BAS viene attenuato ed il segnale croma viene condotto tramite CIC 1430-(44) ad un amplif. di registr. regolato. Da qui esso giunge ad IC 1620-(4) attraverso l'esaltazione del burst (+6dB), che in PAL non funziona, un commutatore registr./riprod., pin 40 ed una trappola da 8,8 MHz (CC 1615, L 1615). In IC 1620, con visualizzazione dei testi inserita, il segnale codificatore arrivato al pin 6

eingeblendet. Ohne Texteinblendung schaltet man das Chromasignal nur nach IC 1620-(8) durch. Bei S-VHS-Aufnahme addiert man nach CR 1610 den über CR 1787 anstehenden Pilot-Burst zum Chromasignal. Dieser entsteht durch einen im CIC 1740 erzeugten Tastimpuls, der aus der von CIC 1430-(31) anstehenden 4,43 MHz-Trägerfrequenz im IC 1795 den Pilot-Burst auftastet. Das Chromasignal (bzw. die Summe aus Chromasignal und Pilot-Burst bei S-VHS) wird über CIC 1430-(39) dem Hauptmischer zugeführt, wo man es mit der 5,06 MHz-Hilfsträgerfrequenz mischt. Das Mischprodukt durchläuft einen Tiefpass und verläßt an Pin 37 das CIC 1430. Nachfolgend wird das Signal begrenzt (CD 1588, CD 1590, CT 1600, CT 1585) und über einen weiteren Tiefpass (CC 1585, L 1584, CC 1582, CT 1585), die Transistoren CT 1580, CT 1553 und den Kontakt S 6-11 dem Videobaustein 2 zugeführt.

Vom geregelten Aufnahmeverstärker an CIC 1430-(44) gelangt das Chromasignal neben dem bisher beschriebenen Weg über einen Verstärker, CIC 1430-(2), einen Spannungsteiler (CR1423, CR1425/CR1426) und CIC 1430-(4) an einen Aufnahme-/Wiedergabeschalter. Nach diesem Schalter verzweigt sich das Signal erneut. Zum einen führt man es bei Aufnahme der Amplitudenregelung (AGC-Det.) und der Phasenregelung zu. Zum anderen durchläuft das Chromasignal bei Durchschleifbetrieb einen Transcoder und die Burstinjection (BI), die beide bei Aufnahme ohne Funktion sind. Nach einem Tiefpass verläßt das Signal über Pin 8 das CIC 1430, durchläuft einen 13,3 MHz-Trap (L 1432, C 1432)= 3xfsc, den Impedanzwandler CT 1435 und wird über Kontakt S 4-4 der Rauschverminderung (NOISE REDUCTION) auf dem Videobaustein 1 zugeführt (EE/VV-Signal). Diese Stufe ist bei Aufnahme als Verstärker zu betrachten. Über Kontakt S 4-3 führt man dieses Signal (CEE/VV) wieder dem Chromabaustein, IC 2055-(4) zu und schaltet es nach Pin 8 durch. Von hier gelangt es zum einen über T 2062 zur Buchse S-VHS OUT-(4). Zum anderen addiert man in der nachfolgenden Additionsstufe CT 2040/CT 2045 das Chromasignal zu dem von IC 2065-(8) anstehenden BAS-Signal, führt das Summensignal dem CIC 2030 über Pin 8 zu und schaltet es nach Pin 6 durch. Von hier gelangt es über T 2087 und Kontakt S 4-2 als "FBAS AV 2-Signal" zur EURO-AV-Buchse 2-(19) auf dem Videobaustein 1. Des weiteren leitet man das FBAS-Signal von IC 2030-(6) über einen Emitterfolger CT 2082, einen Tiefpass-Blockfilter F 2084, den Verstärker CT 2085, Kontakt S2-2 und den ZF-Baustein dem Modulator zu.

**Wiedergabe**

Bei Wiedergabe sind die Funktionen im Chromabaustein bei VHS- und S-VHS-Betrieb völlig gleich.

Das bei Wiedergabe vom Band abgetastete Signal gelangt vom Kopfverstärker über ein im Video-Baustein 3 enthaltenes 627 kHz-Filter, einen Vorverstärker und Kontakt S 6-10 in den Chromabaustein, wo das PAL-Signal ein 627 kHz-Kammfilter durchläuft. Die Funktion eines Kammfilters besteht darin, in einem Schaltungszweig das Signal um 2 Zeilen zu verzögern und es mit dem Signal aus dem unverzögerten Zweig zu addieren. Die Verzögerung des Wiedergabesignals erfolgt zwischen CIC 1355-(7) und CIC 1355-(4). Anschließend durchläuft es nach CT 1358 und dem Einsteller R 1450 einen Tiefpass (CC 1450 / L 1450 / CC 1451), einen Phasenschieber (Allpass), in dem die Spannung des verzögerten Signals mit R 1460 in der Phase einstellbar ist und eine Gegentakt-Treiberstufe (CT 1465). Diese lie-

CR 1610. This is required as a result of the gating pulse generated in CIC 1740, which gated out the Pilot Burst from the 4.43 MHz carrier from CIC 1430-(31). The Chroma signal (or, the sum of the Chroma signal and the Pilot Burst on S-VHS), is fed via CIC 1430-(39) to the Main Mixer in which it is mixed with the 5.06 MHz sub-carrier frequency. The mixing products pass through a Low Pass Filter and leaves the CIC 1430 from Pin 37. Thereafter, the signal is limited (CD 1588, CD 1590, CT 1600, CT 1585) and passes through an additional Low Pass Filter (CC 1585, L 1584, CC 1582,CT 1585) , the transistors CT 1580, CT 1553 and the contact S 6-11 to the Video Module 2.

From the Gain Controlled Record Amplifier CIC 1430-(44), the Chroma signal is fed through the path described earlier, via an amplifier, CIC 1430-(2), a voltage divider (CR 1423, CR 1425/ CR 1426) and CIC 1430-(4) to a Record/Playback switch. After the switch, the signal path deviates again. On record one path is to the Automatic Gain Control Circuit (AGC - Detector) and a Phase Control Circuit. In another path the Chroma Signal, on Loop-Through operation, passes through a transcoder and the Burst Injection (BI) Circuit, both of which carry out no function on record. After a Low Pass Filter, the signal leaves CIC 1430 on Pin 8, passes through a 13.3 MHz trap, (L 1432, C 1432) = 3 x fsc, the Impedance Converter CT 1435 and is fed via contact S 4-4, to the Noise Reduction Circuit and then finally to the Video Module 1 (EE/VV-Signal). On record this stage operates as an amplifier. From contact S 4-3 the signal (CEE/VV) is fed again to the Chroma IC 2255-(4) and is switched to Pin 8. From here the signal passes in one path via T 2062 to the S-VHS OUT-(4) socket. In another path the Chroma signal is combined with the CCVS signal present on IC 2065-(8) in the following Adding stage (CT 2040 / CT 2045). The Sum signal, in CIC 2030 is fed via Pin 8 and is switched through to Pin 6. From here the signal is fed via T 2087 and contact S 4-2 as the "CCVS AV 2 Signal" to the Euro-AV Socket 2-(19) on the Video Module 1. In the other path, the CCVS signal from IC 2030-(6) is fed via an Emitter Follower CT 2082, a Low Pass-Block Filter F 2084 to the amplifier CT 2085, contact S 2-2 and the IF Module to the Modulator.

**Playback**

On Playback the functions carried out in the Chroma Module on VHS and S-VHS mode are completely identical.

The signal scanned from the tape on Playback is fed via the Head Amplifier via a 627 kHz Filter contained on the Video-Module 3, a preamplifier and contact S 6-10 to the Chroma Module in which the PAL signal passes through the 627 kHz Comb Filter. The function of the Comb Filter is to delay the signal in one path by 2 lines periods and to add it to the signal from the undelayed path. The delay of the Playback signal results between CIC 1355-(7) and CIC 1355-(4). Afterwards the signal passes, after CT 1358 and the adjustment resistor R 1450, through a Low Pass Filter (CC 1450/L 1450/CC 1451), a Phase Shifter (All-Pass), in which the amplitude of the delayed signals can be adjusted in phase by R 1460 and a Push Pull Driver Stage (CT 1465). This provides, on the collector and emitter 180° Phase Shifted signals so that during one half field an addition with the direct signal and in the other half field a subtraction can be carried out. Via the CIC 1480-(1), -(2), -(15) the signal is fed, controlled by the HI Pulse via CIC 1480-(10), at 0° and after switch over at 180° - Phase to the Emitter Follower CT 1525. Subsequently, the delayed signal via the

dell'integrato per mezzo di IC 1880-(13), CT 1883, CT 1885 è contenuto nel segnale principale. Senza visualizzazione dei testi, il segnale croma viene trasmesso solo all'integrato 1620-(8). Nella registrazione S-VHS dopo CR 1610, il burst pilota che viene fornito da CR 1787, viene aggiunto al segnale croma. Questo si forma con un impulso di cadenza prodotto in CIC 1740, il quale separa il burst pilota in IC 1795 dalla frequenza portante di 4,43 MHz fornita da CIC 1430-(31). Il segnale croma (risp. te la somma del segn. croma e del Pilot-Burst in S-VHS) viene inviata al mescolatore principale attraverso CIC 1430-(39) ed in questo stadio combinata con la portante ausiliaria 5,06 MHz. Il prodotto di mescolazione passa per un passabasso ed abbandona il CIC 1430 al pin 37. Successivamente il segnale viene limitato (CD 1588, CD 1590, CT 1600, CT 1585) e tramite un ulteriore passabasso (CC 1585, L 1584, CC 1582, CT 1585), i transistor CT 1580, CT 1553 ed il contatto S 6-11 arriva al modulo video 2. Dall'amplif. di registr. regolato in CIC 1430-(44), il segnale croma giunge oltre che dal percorso precedentemente descritto, anche attraverso un amplificatore CIC 1430-(2), un partitore di tensione (CR 1423, CR 1425/CR 1426) e CIC 1430-(4) ad un commutatore registr./riprod. Dopo questo commutatore il segnale si suddivide nuovamente. Da una parte esso viene inviato per la registrazione ai circuiti di regolazione d'ampiezza (riv. AGC) e di fase. Dall'altra, il segnale croma percorre nel funzionamento EE un transcodere l'insertore di burst (BI), ambedue non operanti in registrazione. Dopo un passabasso il segnale lascia al pin 8 il CIC 1430, attraversa una trappola a 13,3 MHz (L 1432, C 1432) = 3xfsc, l'adattatore d'impedenza CT 1435 e tramite il contatto S 4-4 viene inviato allo stadio di soppressione del fruscio (NOISE REDUCTION) nel modulo video 1. Questo stadio in registrazione va considerato come amplificatore. Mediante il contatto S 4-3 questo segnale viene ricondotto nel modulo croma IC 2055-(4) e poi inoltrato verso il pin 8. A questo punto esso giunge da un lato alla presa S-VHS Out-(4) per mezzo di T 2062. Dall'altro, nel successivo stadio sommatore CT 2040/CT 2045 il segnale croma viene aggiunto al segnale BAS fornito dal IC 2065-(8); quindi il segnale somma viene inviato al CIC 2030 passando per pin 8 ed infine procede al pin 6. Da qui esso giunge al modulo video come "segnale FBAS AV 2" per la presa EURO-AV 2-(19) mediante T 2087 ed il contatto S 4-2. Inoltre il segnale FBAS viene condotto al modulatore da IC 2030-(6) attraverso un inseguitore d'emettitore CT 2082, un filtro passabasso F 2084, l'amplificatore CT 2085, il contatto S 2-2 ed il modulo FI.

**Riproduzione**

In riproduzione, le funzioni nel modulo croma per VHS e S-VHS sono perfettamente uguali. Il segnale prelevato dal nastro in riproduzione, dall'amplificatore testine attraverso un filtro a 627kHz contenuto nel modulo video 3, un preamplificatore ed il contatto S 6-10 giunge al modulo croma dove il segnale PAL attraversa un filtro a pettine di 627kHz. La funzione del filtro a pettine consiste nel ritardare di 2 righe il segnale e di sommarlo a quello non ritardato. Il ritardo del segnale di riproduzione avviene tra CIC 1355-(7) e CIC 1355-(4). In ultimo, dopo CT 1358 ed il regolatore R 1450, esso percorre un passabasso (CC 1450/L 1450/CC 1451), uno sfasatore (passatutto), nel quale la tensione del segnale ritardato è regolabile per quanto riguarda la fase con R 1460, ed infine uno stadio pilota in controfase (CT 1465). Quest'ultimo fornisce al collettore ed all'emettitore segnali sfasati di 180° e ciò per poter effettuare in fert an Kollektor und Emitter um 180° phasenverschobene Signale, um bei einem Halbbild mit dem direkten Signal eine Addition und beim anderen eine Subtraktion vornehmen zu können. Über den Schalter CIC 1480-(1), -(2), -(15) gelangt das Signal, vom HI-Impuls über CIC 1480-(10) gesteuert, einmal mit 0° und nach dem Umschalten mit 180°-Phase zum Emitterfolger CT 1525. Anschließend addiert man das verzögerte Signal über die Widerstandsmatrix CR 1526 / CR 1520 zum direkten Signal.

Bei SECAM-Wiedergabe erzeugt die SECAM-Identifikation CIC 1700 an Pin 2 das Signal "+S (+SECAM)". Transistor CT 1518 wird leitend, CT 1520 sperrt. Dadurch umgeht man das Kammfilter und an den Emittern der Transistoren CT 1518 / CT 1520 steht nur das unverzögerte, direkte Signal.

Das "Colour-under"-PAL-Summensignal (verzögertes und unverzögertes Signal) gelangt über CT 1520/CC 1475 zum Schalter CIC 1480, wo es, außer bei den Betriebsarten Longplay-Multi Speed und Longplay-Standbild, von Pin 3 nach Pin 4 durchgeschaltet wird. Daran schließt sich ein in Stufen veränderbarer Allpass als Phasenschieber (CT 1530) an, der es zusammen mit dem Schalt-CIC 1565 bei den verschiedenen Betriebsarten wie S-VHS, VHS und "Q-VHS" (VHS-Aufnahme mit S-VHS-Cassette) ermöglicht die Laufzeit des Chromasignals zu verschieben und damit die Farbdeckung zwischen Chrominanz- und Luminanz-Signal einzustellen (R 1567 / R 1568 / R 1570). Das Schalt-CIC 1565 wird über ein Schieberegister CIC 1855 vom seriellen Bus gesteuert. Über den Emitterfolger CT 1535 gelangt das Chromasignal an CIC 1430-(42). Für die Betriebsarten Longplay, Multi Speed und Longplay-Standbild gelangt das Chromasignal vom Emitter des CT 1520 über CC 1392 an IC 1380-(6). Dieser verzögert das Signal um eine halbe Zeile (1/2H), bevor es über Pin 4, CT 1390, CIC 1480-(5), -(4), CT 1530 und CT 1535 ebenfalls an CIC 1430-(42) gelangt. Von hier aus durchläuft das Chromasignal einen geregelten Verstärker und den Aufnahme-/Wiedergabeschalter, bevor es an Pin 40 das CIC verläßt. Der anschließende 8,8 MHz-Trap unterdrückt entstandene Störfrequenzen. Im IC 1620 wird das Signal von Pin 4 nach Pin 8 durchgeschaltet und gelangt über CIC 1430-(39) zum Hauptmischer, wo es mit dem 5,06 MHz-Hilfsträger gemischt wird. Nach einem weiteren Aufnahme-/Wiedergabeschalter wird das zurückgewonnene 4,43 MHz-Chromasignal zwischen CIC 1430-(46) und CIC 1430-(44) im Filter F 1493 von unerwünschten Mischprodukten befreit. Es durchläuft im CIC 1430 einen Wiedergabeverstärker und einen 18dB-Verstärker bevor es an Pin 2 das CIC verläßt und nach einem Spannungsteiler über CIC 1430-(6) wieder eingespeist wird. Anschließend wird das Chromasignal um 18 dB verstärkt und über einen Aufnahme-/Wiedergabeschalter, einmal dem Wiedergabephasenvergleich und zum anderen der sog. "Konjugiert/Komplexbildung" zugeführt. Sie erkennt bei Longplay-Multispeed und Longplay-Standbild Fehler in der PAL-Sequenz und korrigiert diese. Nach einem Tiefpass verläßt das Chromasignal das CIC 1430 an Pin 8 und durchläuft einen Sperrkreis (L 1432, CC 1432) wo das störende 13,3 MHz-Mischprodukt der "Konjugiert / Komplexbildung" unterdrückt wird. Der weitere Signalweg verläuft wie bei Aufnahme.

### Trägeraufbereitung

### Aufnahme

Zur Trägeraufbereitung verwendet man einen

resistor matrix CR 1526/CR 1520 is added to the direct signal.

On SECAM Playback the CIC 1700 generates on Pin 2, the "+S(+SECAM)" signal for SECAM identification. Transistor CT 1518 conducts, CT 1520 is cut off. The Comb Filter is thereby bypassed and, on the emitters of the transistors CT 1518/CT 1520, only the undelayed, direct signal is present.

The "Colour-under"-PAL-Summed Signal (delayed and undelayed signal) is fed via CT 1520/CC 1475 to CIC 1480 in which, exept on the Long Play-Multi Speed and Long Play Freeze Frame Modes, the signal is switched through from Pin 3 to Pin 4. An adjustable All Pass Circuit operating as a Phase Shifter (CT 1530) is connected so that in combination with the CIC 1565 it is possible to adjust the delay time of the Chroma Signal so that the Chrominance and Luminance signal coincide. This is adjustable (R 1567/R 1568/R 1570) according to the different operating modes such as S-VHS, VHS and "Q-VHS" (VHS recording with S-VHS cassettes). The CIC 1565 is controlled via a shift register IC 1855 from the serial Bus. From the Emitter Follower CT 1535 the Chroma signal is fed to CIC 1430-(42). For the operating mode Long Play, Multi Speed and Long Play-Freeze Frame, the Chroma signal passes from the emitter of CT 1520 via CC 1390 to IC 1380-(6). This delays the signal by one half line (1/2 H), before it is fed via Pin 4, CT 1390, CIC 1480-(5), -(4), CT 1530 and CT 1535 eventually to CIC 1430-(42). From here the path of the Chroma signal is through a gain controlled amplifier and the record/playback switch, before it leaves Pin 40 of the CIC. The 8.8 MHz trap connected suppresses any resulting interference frequencies. In IC 1620 the signal is switched through from pin 4 to Pin 8 and is applied via CIC 1430-(39) to the Main Mixer, in which it is mixed with the 5.06 MHz subcarrier. After a further record/playback switch the regained 4.43 MHz Chroma Signal is freed from any mixing products by passing through the Filter F 1493 connected between CIC 1430-(46) and CIC 1430-(44). The Signal passes, in CIC 1430, through a playback amplifier and an 18 dB amplifier before it leaves the CIC on Pin 2 and passes through a voltage divider before being fed back into CIC 1430-(6). Subsequently the Chroma signal is amplified by 18 dB and is fed via a record/playback switch, in one path for playback phase comparison and in another via the so called "Conjugate / Complex Formation" circuit. This identifies, on Longplay, Multi Speed and Longplay-Freeze Frame, any faults in the PAL sequence and corrects them. After passing through a Low Pass Filter the Chroma signal leaves the CIC 1430 from Pin 8 and passes through a trap circuit (L 1432, CIC 1432) in which the interfering 13.3 MHz mixing products of the "Conjugate / Complex Formation" are suppressed. The signal path that the signal now takes is the same as for record.

### Carrier Preparation

### Record

For Carrier preparation, use is made of a voltage controlled oscillator (VCO 1) in CIC 1430 which produces an oscillating frequency (8.867 MHz) determined by the quartz (Q 1637) connected to Pin 33. The frequency is divided by 2 and then fed to an APC Detector ( φ 1) in which the Phase of the transmitted Burst is compared to that of VCO 1 and the latter is controlled. The filter circuit for the control voltage is connected to CIC 1430-(32). In addition, an oscillator VCO 2 is required which oscillates at a multiple of line frequency (321 $f_H$). The line synchronising signal is fed in

un semiquadro la somma al segnale diretto e nell´altro la sottrazione. Per mezzo del commutatore CIC 1480-(1), -(2), -(15) il segnale giunge, comandato dall´impuslo HI tramite CIC 1480-(10), una volta con fase 0° e dopo la commutazione con fase 180° all´inseguitore d´emettitore CT 1525. Infine il segnale ritardato viene aggiunto a quello diretto mediante la matrice di resistenza CR 1526/CR 1520.

Nella riproduzione SECAM, il relativo circuito di identificazione CIC 1700 produce al pin 2 il segnale "+S (+SECAM)". Il transistor CT 1518 conduce, CT 1520 è bloccato. In questo modo il filtro a pettine viene aggirato ed agli emettitori dei transistor CT 1518/CT 1520 si trova solo il segnale diretto non ritardato.

Il segnale "Colour-under"-somma PAL (segnale ritardato e non) arriva al commutatore CIC 1480 tramite CT 1520/CC 1475 e qui, tranne che per le funzioni Longplay-Multi-Speed e fermo immagine in Longplay, viene commutato da pin 3 a pin 4. A questo circuito si collega un passatutto variabile a gradini come sfasatore (CT 1530) il quale assieme al CIC 1565, per i vari modi di funzionamento come S-VHS, VHS e "Q- VHS" (registrazione VHS con cassetta S-VHS) consente lo spostamento del tempo di transito del segnale croma e quindi la sovrapposizione del colore tra i segnali di crominanza e di luminanza (R 1567/R 1568/R 1570). L´integrato CIC 1565 viene comandato dal bus seriale per mezzo di un registro a scorrimento CIC 1855. Attraverso l´inseguitore d´emettitore CT 1535 il segnale arriva al CIC 1430-(42). Per i modi di funzionamento Longplay, Multispeed e fermo immagine in Longplay, il segnale croma dall´emettitore CT 1520 perviene ad IC 1380-(6) tramite CC 1392. Questo ritarda il segnale di mezza riga (1/2H), prima che anch´esso giunga al CIC 1430-(42) attraverso pin 4, CT 1390, CIC 1480-(5), -(4), CT 1530 e CT 1535. A questo punto il segnale croma passa per un amplificatore regolato ed un commutatore registr./riprod., prima di lasciare l´integrato attraverso il pin 40. La trappola ad 8,8MHz collegata sopprime le frequenze interferenti prodotte. In IC 1620 il segnale viene commutato da pin 4 a pin 8 ed attraverso CIC 1430-(39) arriva al mescolatore principale ove viene combinato con la portante ausiliaria 5,06MHz. Dopo un ulteriore commutatore registr./riprod. il segnale croma 4,43MHz riottenuto tra CIC 1430-(46) e CIC 1430-(44) viene pulito dai prodotti di mescolazione estranei nel filtro F 1493. Nel CIC 1430 esso percorre un amplif. di riproduzione ed un altro di 18 dB, prima che abbandoni l´integrato al pin 2. Dopo un partitore di tensione rientra nell´integrato al pin 6. Infine il segnale croma viene amplificato di 18 dB ed attraverso un commutatore registr./riprod. inviato da una parte al comparatore di fase in riproduzione e dall´altra al cosiddetto "formatore coniugato/complesso". Nelle funzioni Longplay-Multispeed e fermo immagine in Longplay esso individua eventuali errori nella sequenza PAL e li corregge. Dopo un passabasso il segnale croma lascia il CIC 1430 al pin 8 ed attraversa un circuito trappola (L 1432, CC 1432) con cui viene soppresso il prodotto di mescolazione a 13,3MHz del "formatore coniugato/complesso". Il successivo percorso del segnale avviene come in registrazione.

### Preparazione della portante

### Registrazione

Per questo viene impiegato un oscillatore a quarzo comandato in tensione (VCO 1) nel CIC 1430, la cui frequenza (8,867MHz) viene determinata dal quarzo (Q 1637) collegato al pin 33. La frequenza viene ora divisa per 2. Essa giunge al rivelatore APC ( φ 1) che spannungsgesteuerten Quarzoszillator (VCO 1) im CIC 1430 dessen Oszillatorfrequenz (8,867 MHz) von dem an Pin 33 angeschlossenen Quarz (Q 1637) bestimmt wird. Anschließend teilt man die Frequenz durch 2 und führt sie dem APC-Detektor ( φ 1) zu, der die Phase des Senderbursts mit der des VCO 1 vergleicht und diesen nachregelt. Das Siebglied für diese Regelspannung ist an CIC 1430-(32) angeschlossen. Des weiteren benötigt man den Oszillator VCO 2, der auf einem Vielfachen der Zeilenfrequenz schwingt (321 $f_H$). Das Zeilensynchronsignal wird über CIC 1430-(20) zugeführt. Die Regelung des VCO 2 erfolgt phasenstarr durch die Phasenvergleichsstufe φ Hor. Die Siebglieder dieser Regelspannung liegen an CIC 1430-(14). Die von VCO 2 erzeugte Frequenz von 5,015625 MHz teilt man in einem Abwärtszähler (1:8) durch 8 und führt sie einer 4-Phasen-Rotationsstufe zu. Die in dieser Stufe ausgewählte Phase durchläuft einen Tiefpass und erreicht nach dem SSB-Mischer (Einseitenband), in dem die 627kHz mit der durch 2 geteilten Frequenz des VCO 1 gemischt wird (627kHz + 4,43MHz = 5,06MHz), den Hauptmischer.

**Wiedergabe**
Bei Wiedergabe verwendet man die Frequenz des frei auf der Quarzfrequenz (Q 1637 - 8,867 MHz) schwingenden Oszillators VCO 1 nach Teilung durch 2 als Referenz und den Oszillator VCO 3. Der VCO 3 wird nach erfolgter Rückmischung des Chromasignals von 627 kHz auf 4,43 MHz vom Burst des wiedergegebenen F-Signals synchronisiert. Die APC-Stufe ( φ Pb) erzeugt die Regelspannung für den VCO 3 und vergleicht dabei die Phase des Quarzoszillators mit der Phase des rückgemischten 4,43 MHz-Bursts. Das Siebglied für diese Regelspannung liegt an CIC 1430-(9). Über einen Aufnahme-/Wiedergabeschalter führt man die im VCO 3 erzeugte Frequenz dem Teiler 1:8 zu. Der VCO 2 ist auch bei Wiedergabe in Betrieb und wird durch das an Pin 20 anstehende Synchrongemisch synchronisiert. Die weitere Frequenzaufbereitung erfolgt wie bei Aufnahme.

via CIC 1430-(20). The control of the VCO 2 is phase locked by the Phase Comparator Stage φ Horizontal. The Filter Circuit for the control voltage is connnected to CIC 1430-(14). The 5.015625 MHz frequency generated by the VCO 2 is divided in a down counter (1:8) by 8 and then fed to a 4 phase rotation stage. In this stage, the selected phase is fed through a Low Pass Filter to reach the SSB-Mixer in which the 627 kHz is mixed with the frequency of the VCO 1 which has been divided by 2 (single side band), in the Main Mixer.

**Playback**
On playback use is made of the frequency from the free running quartz frequency (Q 1537-8.867 MHz) from VCO 1 after division by 2 which acts as the reference and also the oscillator VCO 3. The VCO 3 after remixing of the Chroma signal of 627 kHz with the 4.43 MHz is synchronised by the Burst of the played back Chroma signal. The APC-Stage ( φPb) generates the control voltage for VCO 3 and compares therefore the phase of the quartz oscillator with the phase of the remixed 4.43 MHz burst. The filter circuit for this control voltage is connected to CIC 1430-(9). Via a record/playback switch the frequency generated by the VCO 3 is fed to the divider 1:8. The VCO 2 is also in operation on playback and is synchronised by the composite sync signal present on Pin 20. The further frequency processing is carried out in the same way as for record.

confronta la fase del burst del segnale trasmesso con quella del VCO 1 e la regola di conseguenza. Il filtro per questa tensione di regolazione è collegato al CIC 1430-(32). Inoltre si impiega anche un oscillatore VCO 2 che oscilla ad un valore multiplo della frequenza di riga (321 $f_H$). Il segnale di sincronismo di riga viene applicato attraverso CIC 1430-(20). La regolazione del VCO 2 avviene a fase rigida con il comparatore di fase ( φ or.). I filtri per questa tensione di regolaz. si trovano nel CIC 1430-(14). La freuquenza di 5,015626MHz prodotta nel VCO 2 viene divisa per 8 nel contatore regressivo (1:8) e poi trasferita ad uno stadio di rotazione a 4 fasi. La fase scelta in questo stadio percorre un passabasso e raggiunge il mescolatore principale dopo aver superato il mescolatore SSB, dove il segnale 627 kHz viene combinato con la frequenza dell'oscillatore VCO1 divisa per 2 (banda laterale unica).

**Riproduzione**
In riproduzione si impiega come riferimento la frequenza dell'oscillatore VCO 1 funzionante in regime libero alla frequenza di Q 1637 - 8,867MHz dopo la divisione per 2 e l'oscillatore VCO 3. Il VCO 3 viene sincronizzato dal burst del segnale croma riprodotto dopo l'avvenuta mescolazione del segnale croma a 627 kHz con la frequenza a 4,43MHz. Lo stadio APC ( φ Pb) produce la tensione di regolazione per il VCO 3 e confronta la fase dell'oscillatore a quarzo con quella del burst a 4,43 MHz ricomposto. Il filtro per questa tensione di regolazione si trova in CIC 1430-(9). Mediante un commutatore resistr./riprod. la frequenza prodotta nel VCO 3 viene inviata al divisore 1:8. Il VCO 2 funziona anche in riproduzione e viene sincronizzato con il segnale di sincronismo composito presente al pin 20. La successiva elaboratzione della frequenza avviene come in registrazione.

## (D) Abgleich

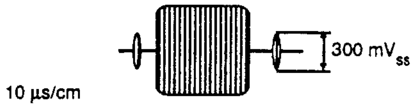
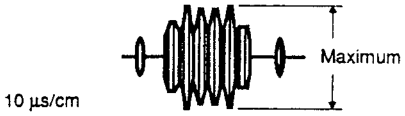
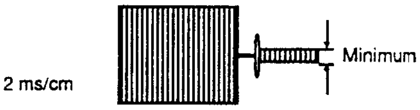
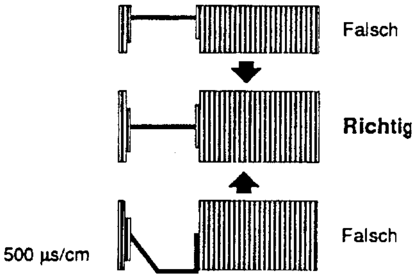
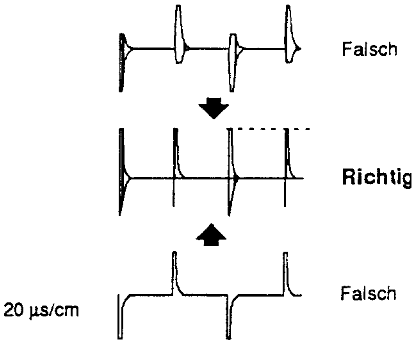
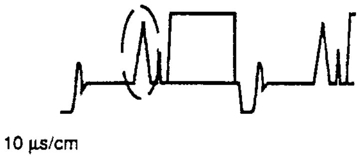
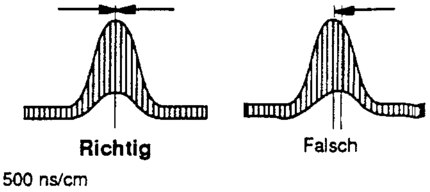
**Meßgeräte :**
Oszilloskop, Tastkopf 10 : 1, Frequenzzähler, Videogenerator
**Servicearbeiten nach Bausteinwechsel:**
Abgleich Nr. 8

## (GB) Adjustment

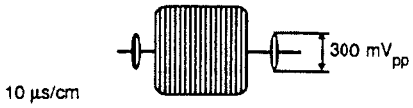
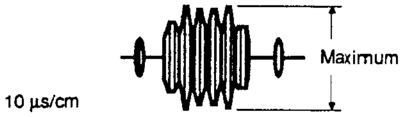
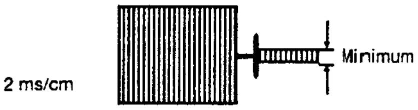
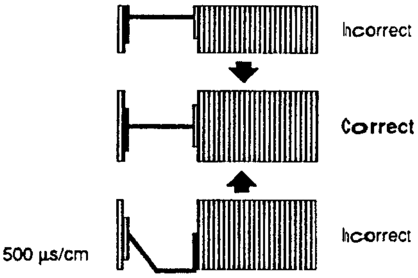
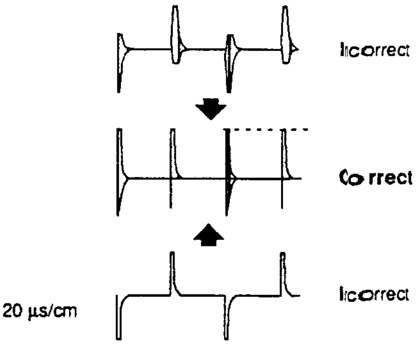
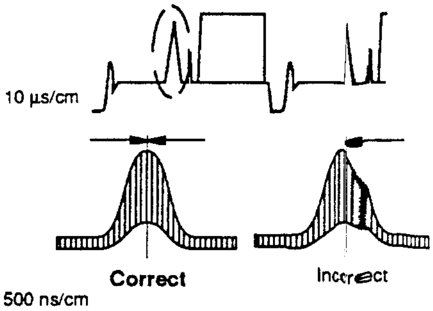
**Test equipment:**
Oscilloscope, 10 : 1 probe, frequency counter, video generator
**Servicing work after changing board:**
Adjustment no. 8

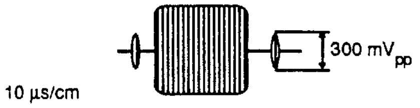
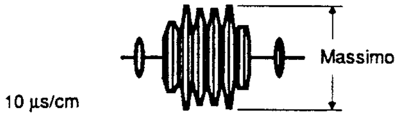
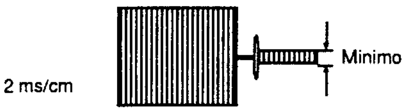
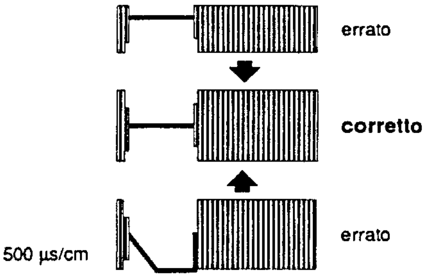
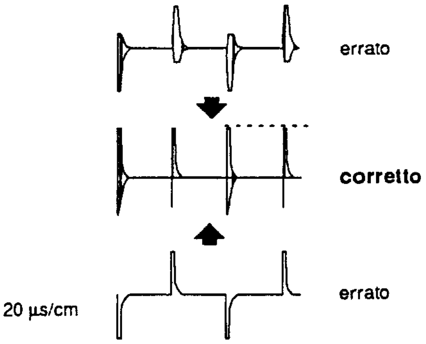
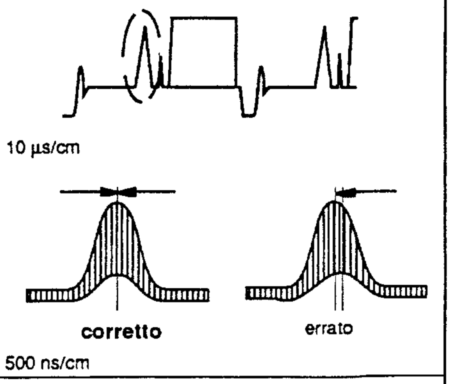
## (I) Taratura

**Strumenti :**
Oscilloscopio, sonda 10 : 1, frequenzimetro, generatore video
**Lavori da eseguire dopo la sostituzione del modulo:** taratura no. 8

| (D) Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. 627 kHz-Oszillator | CIC 1430-(15) an +5V legen.<br>Frequenzzähler:<br>CIC 1430-(23) | Aufnahme | R 1685 | Frequenz auf 15625 Hz einstellen. Verbindung nach +5V auftrennen. |
| 2. Chromaaufsprechstrom | Rotflächentestbild einspeisen<br>Oszilloskop:<br>Kontakt S 6-11<br>Trigger: S 6-1 (Sync) | Aufnahme (Normal-VHS) | R 1595 |  |
| 3. 8,8 MHz-Oszillator | Frequenzzähler:<br>CIC 1430-(31) | Wiedergabe | C 1637 | Frequenz auf 4,433619 MHz ± 5 Hz einstellen. |
| 4. Symmetrie CIC 1355 (MN 3802 AS) | Oszilloskop:<br>CIC 1480-(15)<br>Trigger: S 6-1 (Sync) | Wiedergabe (Farbbalken) | R 1375 |  |
| 5. 627 kHz-Kammfilter | CIC 1480-(12) an Masse legen.<br>Oszilloskop:<br>CIC 1480-(3)<br>Trigger: S 7-6 (HI) | Eigenaufnahme wiedergeben (Rotsignal) | R 1450<br>R 1460 |  <br>Masseverbindung auftrennen. |
| 6. Symmetrie IC 1380 (MNM 6987) | Oszilloskop:<br>CIC 1480-(5)<br>Trigger: S 7-6 (HI) | Eigenaufnahme wiedergeben (Rotsignal) | R 1385 |  |
| 7. SECAM-Identification | Oszilloskop:<br>CIC 1700-(16)<br>Trigger: CIC 1700-(8) | MESECAM-Wiedergabe | L 1753 |  |
| 8. Farbdeckung | 20T/2T-Testbild einspeisen.<br>Oszilloskop:<br>EURO-AV 1-(19)<br>Trigger: S 6-1 | S-VHS-Aufnahme auf S-VHS-Cassette Wiedergabe dieser Aufnahme<br>VHS-Aufnahme auf VHS-Cassette Wiedergabe dieser Aufnahme<br>VHS-Aufnahme auf S-VHS-Cassette Wiedergabe dieser Aufnahme | R 1567<br>R 1568<br>R 1570 |  <br> |

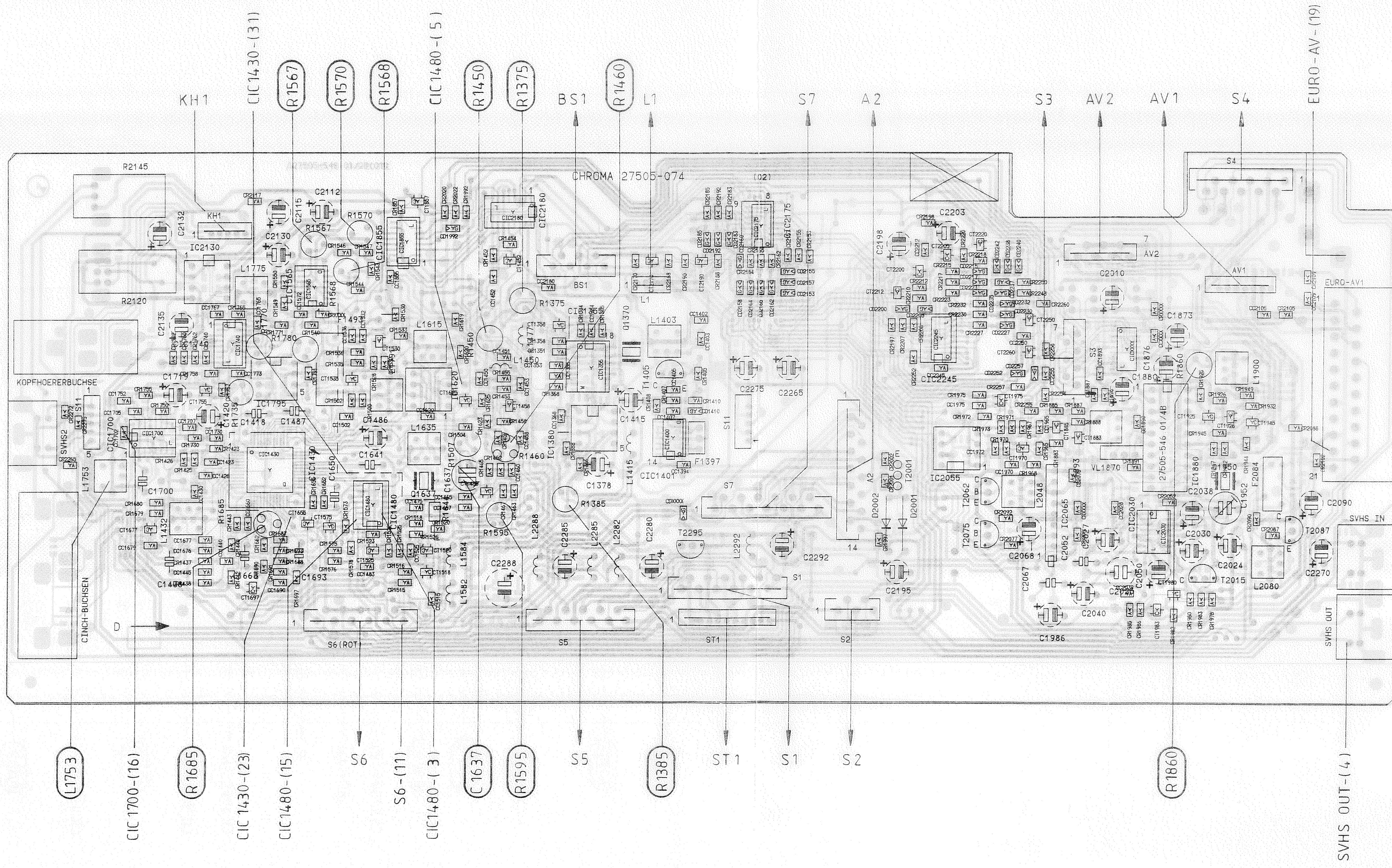
| | | | | |
|---|---|---|---|---|
| 9. Burstphase | Oszilloskop:<br>S-VHS-Buchse OUT<br>Kontakt 4<br>Trigger: CIC 1700-(8) | Geräteeigenen Testbildgenerator einschalten | R 1860 | Burstamplituden von 2 aufeinanderfolgenden Zeilen auf gleiche Amplitude einstellen. |

| GB Adjustment | Preparation | Cassette Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. 627 kHz oscillator | Connect CIC 1430-(15) to +5V.<br>Frequency counter:<br>CIC 1430-(23) | Record | R 1685 | Set frequency to 15625 Hz .<br>Disconnect IC 1430-(15) from +5V. |
| 2. Chroma record current | Feed in a red area test signal<br>Oscilloscope:<br>Plug contact S 6-11<br>Trigger: S 6-1 (Sync) | VHS Record | R 1595 |  |
| 3. 8,8 MHz oscillator | Frequency counter:<br>CIC 1430-(31) | Playback | C 1637 | Set frequency to 4,433619 MHz ± 5 Hz . |
| 4. Symmetry CIC 1355 (MN 3802 AS) | Oscilloscope:<br>CIC 1480-(15)<br>Trigger: S 6-1 (Sync) | Playback (Colour bar test signal) | R 1375 |  |
| 5. 627 kHz comb filter | Connect CIC 1480-(12) to chassis.<br>Oscilloscope:<br>CIC 1480-(3)<br>Trigger: S 7-6 (HI) | Playback a selfmade record (red area test signal) | R 1450<br>R 1460 |  <br>Disconnect CIC 1480-(12) from chassis. |
| 6. Symmetry IC 1380 (MNM 6987) | Oscilloscope:<br>CIC 1480-(5)<br>Trigger: S 7-6 (HI) | Playback a selfmade record (red area test signal) | R 1385 |  |
| 7. SECAM Identification | Oscilloscope:<br>CIC 1700-(16)<br>Trigger: CIC 1700-(8) | Playback a MESECAM record | L 1753 |  |
| 8. Colour Coincidence | Input a 20T/2T test pattern signal<br>Oscilloscope:<br>EURO-AV 1-(19)<br>Trigger: S 6-1 | Record a S-VHS cassette in S-VHS mode<br>Playback this record<br>Record a VHS cassette in VHS mode<br>Playback this record<br>Record in VHS mode on a S-VHS cassette<br>Playback this record | R 1567<br>R 1568<br>R 1570 |  |
| 9. Burst phase | Oscilloscope:<br>S-VHS-socket OUT<br>Contact 4<br>Trigger: CIC 1700-(8) | Switch on the integrated test signal generator | R 1860 | Adjust the burst of two succesive lines to the same amplitude. |

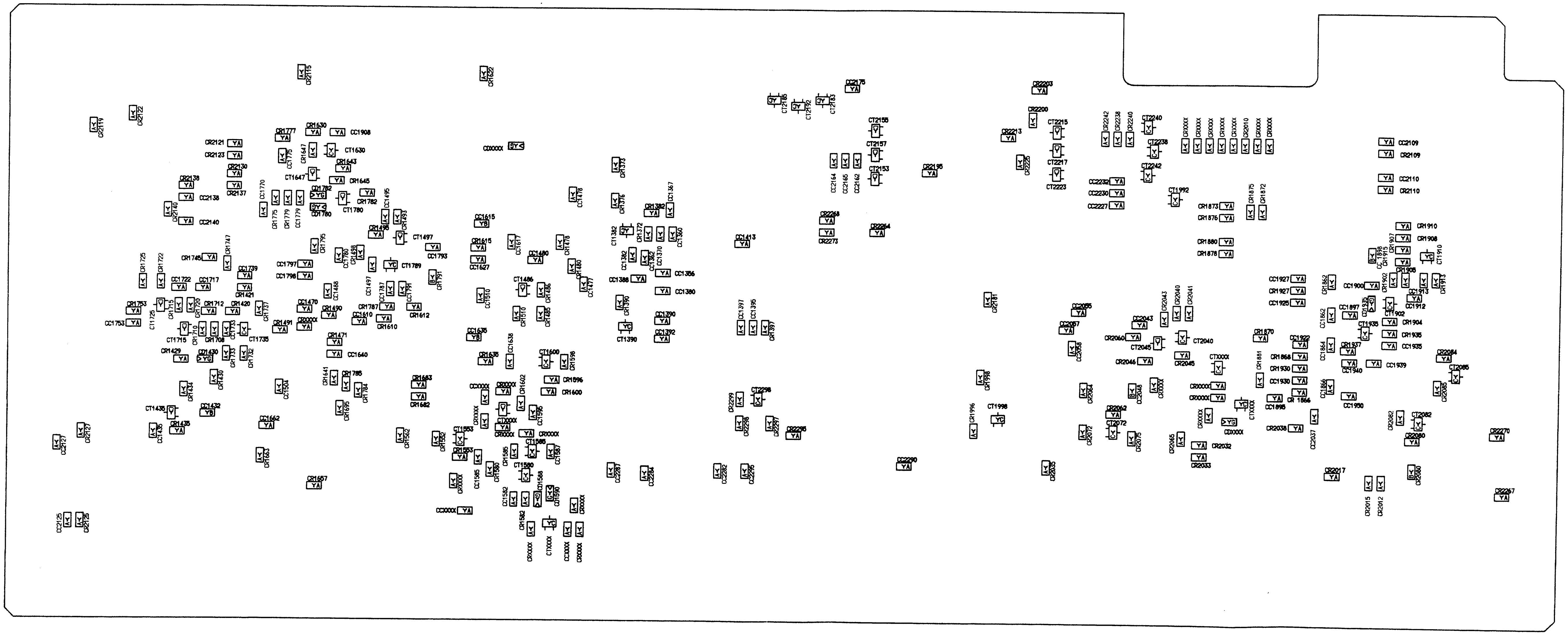
| Ⓘ Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Oscillatore 627 kHz | Applicare CIC 1430-(15) a +5V.<br>Frequenzimetro: CIC 1430-(23) | Registrzione | R 1685 | Regolare la frequenza a 15625 Hz.<br>Togliere il collegamento verso +5V. |
| 2. Corrente registraz. croma | Applicare il monoscopio a pagina rossa<br>Oscilloscopio: Contatto S 6-11<br>Trigger: S 6-1 (sinc) | Registrzione (VHS normale) | R 1595 |  |
| 3. Oscillatore 8,8 MHz | Frequenzimetro: CIC 1430-(31) | Riproduzione | C 1637 | Regolare la frequenza a 4,433619 MHz ± 5 Hz |
| 4. Simmetria CIC 1355 (MN 3802 AS) | Oscilloscopio: CIC 1480-(15)<br>Trigger: S 6-1 (sinc) | Riproduzione (barre colore) | R 1375 |  |
| 5. Filtro a pettine 627 kHz | Collegare CIC 1480-(12) a massa.<br>Oscilloscopio: CIC 1480-(3)<br>Trigger: S 7-6 (HI) | Riprodurre una registrazione propria (segn. rosso) | R 1450<br>R 1460 |  <br>Togliere il collegamento di massa. |
| 6. Simmetria IC 1380 (MNM 6987) | Oscilloscopio: CIC 1480-(5)<br>Trigger: S 7-6 (HI) | Riprodurre una registrazione propria (segn. rosso) | R 1385 |  |
| 7. Identificazione SECAM | Oscilloscopio: CIC 1700-(16)<br>Trigger: CIC 1700-(8) | Riproduzione MESECAM | L 1753 |  |
| 8. Copertura colore | Applicare un monoscopio 20T/2T.<br>Oscilloscopio: EURO-AV 1-(19)<br>Trigger: S 6-1 | Registrazione S-VHS su cassetta S-VHS Riproduzione di guesta registrazione<br>Registrazione VHS su cassetta VHS Riproduzione di guesta registrazione<br>Registrazione VHS su cassetta S-VHS Riproduzione di guesta registrazione | R 1567<br>R 1568<br>R 1570 |  |
| 9. Fase burst | Oscilloscopio: presa S-VHS OUT contatto 4<br>Trigger: CIC 1700-(8) | Regolare il monoscopio dell'apparecchio | R 1860 | Regolare il burst di due righe successive alla stessa ampiezza. |

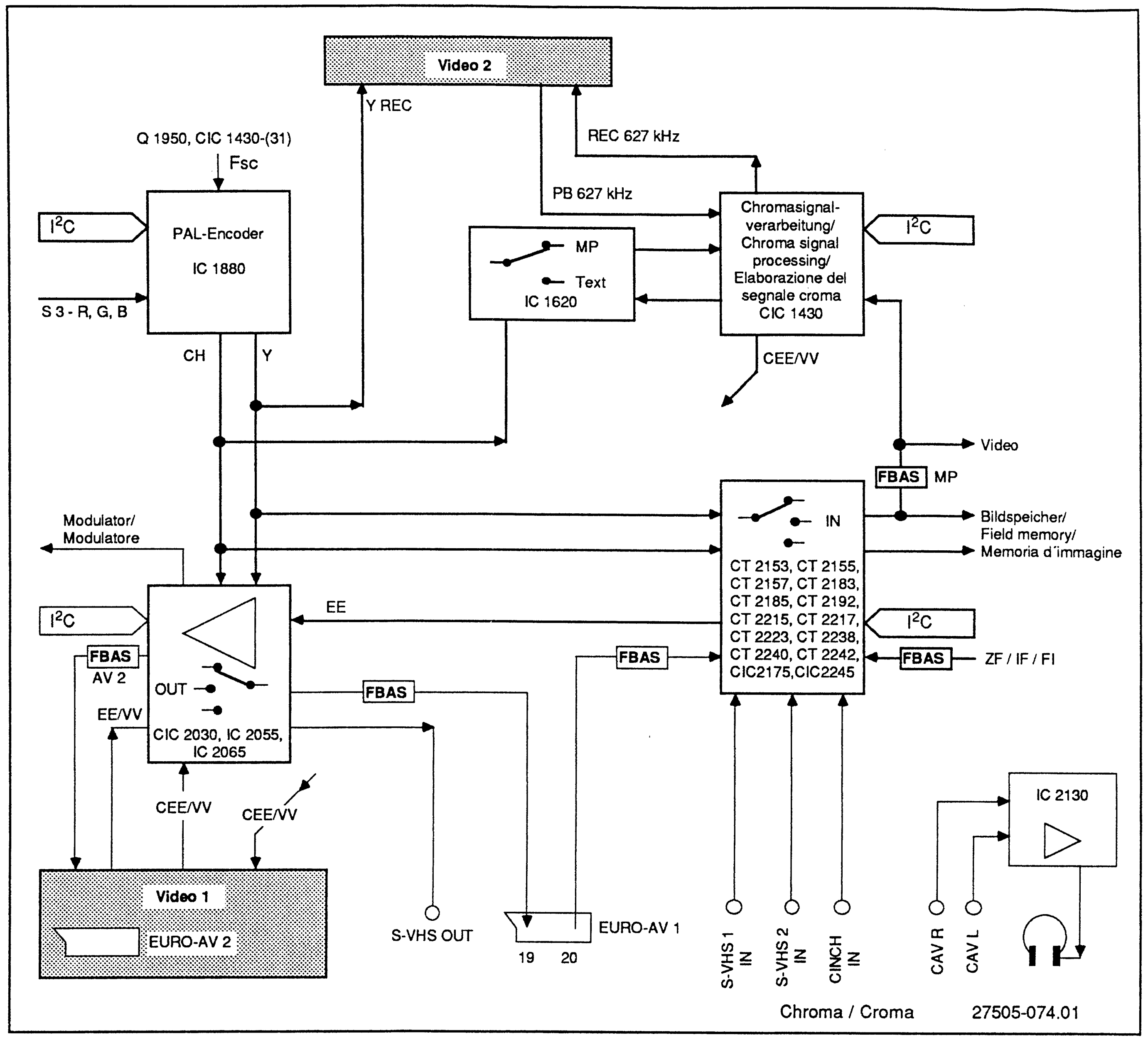
## Chroma / Croma

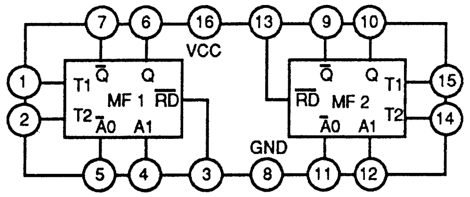
A 2 - Chassisplatte II / Chassis Board II / Piastra telaio II
AV 1 - Ton / Sound / Audio
BS 1 - Bildspeicher / Field Memory / Memoria d´immagine
KH 1 - Tonbaustein / Sound module / Modulo audio
L 7 - Laufwerk / Drive Mechanism / Meccanica
S 1 - Chassisplatte I / Chassis Board I / Piastra telaio I
S 2 - ZF-Verstärker / IF Amplifier / Amplificatore FI
S 3 - Chassisplatte II / Chassis Board II / Piastra telaio II
S 4 - Video 1
S 5 - Video 1
S 6 - Video 2
S 7 - Video 2
ST 1 - Tonbaustein / Sound module / Modulo audio


KH1
CIC1430-(31)
R1567
R1570
R1568
CIC1480-(5)
R1450
R1375
BS1
R1460
L1
S7
A2
S3
AV2
AV1
S4
EURO-AV-(19)
CHROMA 27505-074
KOPFHOERERBUCHSE
CINCH-BUCHSEN
EURO-AV1
SVHS IN
SVHS OUT
S6(ROT)
S5
ST1
S1
S2
D
L1753
CIC1700-(16)
R1685
CIC1430-(23)
CIC1480-(15)
S6
S6-(11)
CIC1480-(3)
C1637
R1595
S5
R1385
ST1
S1
S2
R1860
SVHS OUT-(4)

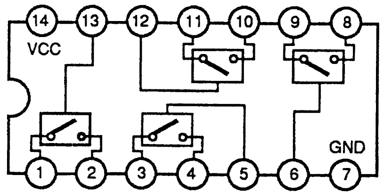
Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



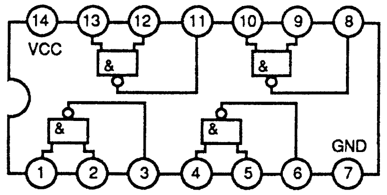

Video 2
Y REC
REC 627 kHz
PB 627 kHz
Q 1950, CIC 1430-(31)
Fsc
I²C
PAL-Encoder
IC 1880
S 3 - R, G, B
MP
Text
IC 1620
Chromasignal-verarbeitung/ Chroma signal processing/ Elaborazione del segnale croma CIC 1430
CH
Y
CEE/VV
Video
FBAS
MP
IN
Bildspeicher/ Field memory/ Memoria d´immagine
Modulator/ Modulatore
EE
CT 2153, CT 2155, CT 2157, CT 2183, CT 2185, CT 2192, CT 2215, CT 2217, CT 2223, CT 2238, CT 2240, CT 2242, CIC2175,CIC2245
ZF / IF / FI
AV 2
OUT
EE/VV
CIC 2030, IC 2055, IC 2065
IC 2130
Video 1
EURO-AV 2
S-VHS OUT
EURO-AV 1
19
20
S-VHS 1 IN
S-VHS 2 IN
CINCH IN
CAV R
CAV L
Chroma / Croma
27505-074.01


VCC
T1
MF 1
T2
A0
A1
RD
MF 2
GND

**PC 74HC 4538**

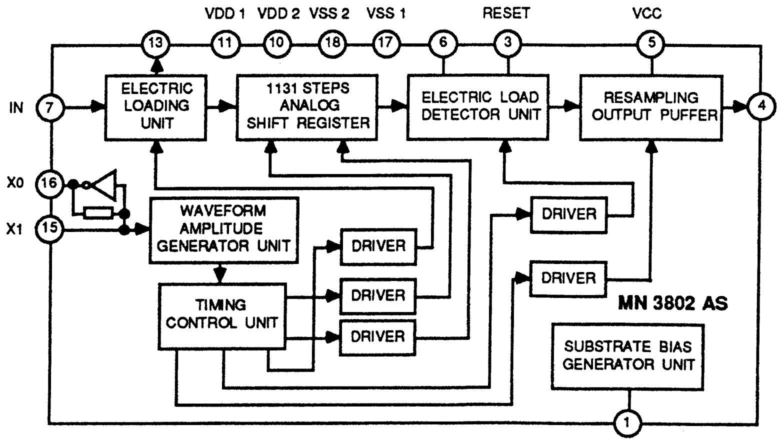


**PC 74HC 4066**

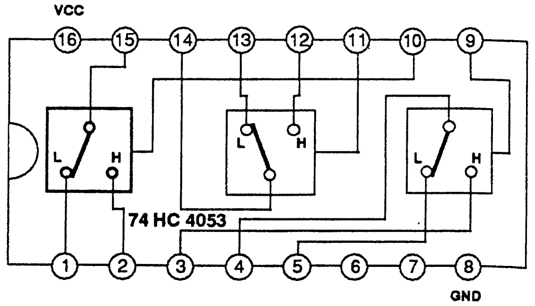


**PC 74HC 00**

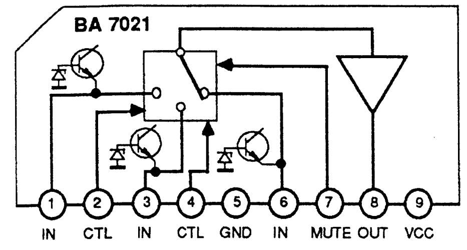
**MN 3802 AS**


VDD 1
VDD 2
VSS 2
VSS 1
RESET
VCC
IN
ELECTRIC LOADING UNIT
1131 STEPS ANALOG SHIFT REGISTER
ELECTRIC LOAD DETECTOR UNIT
RESAMPLING OUTPUT PUFFER
OUT
X0
X1
WAVEFORM AMPLITUDE GENERATOR UNIT
DRIVER
TIMING CONTROL UNIT
SUBSTRATE BIAS GENERATOR UNIT
MN 3802 AS

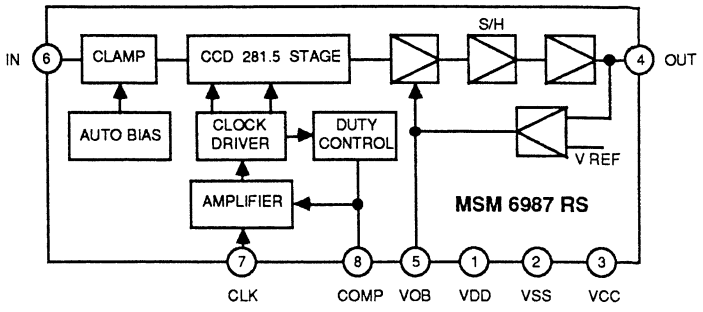
**74 HC 4053 / HEF 4053**


VCC
L
H
74 HC 4053
GND

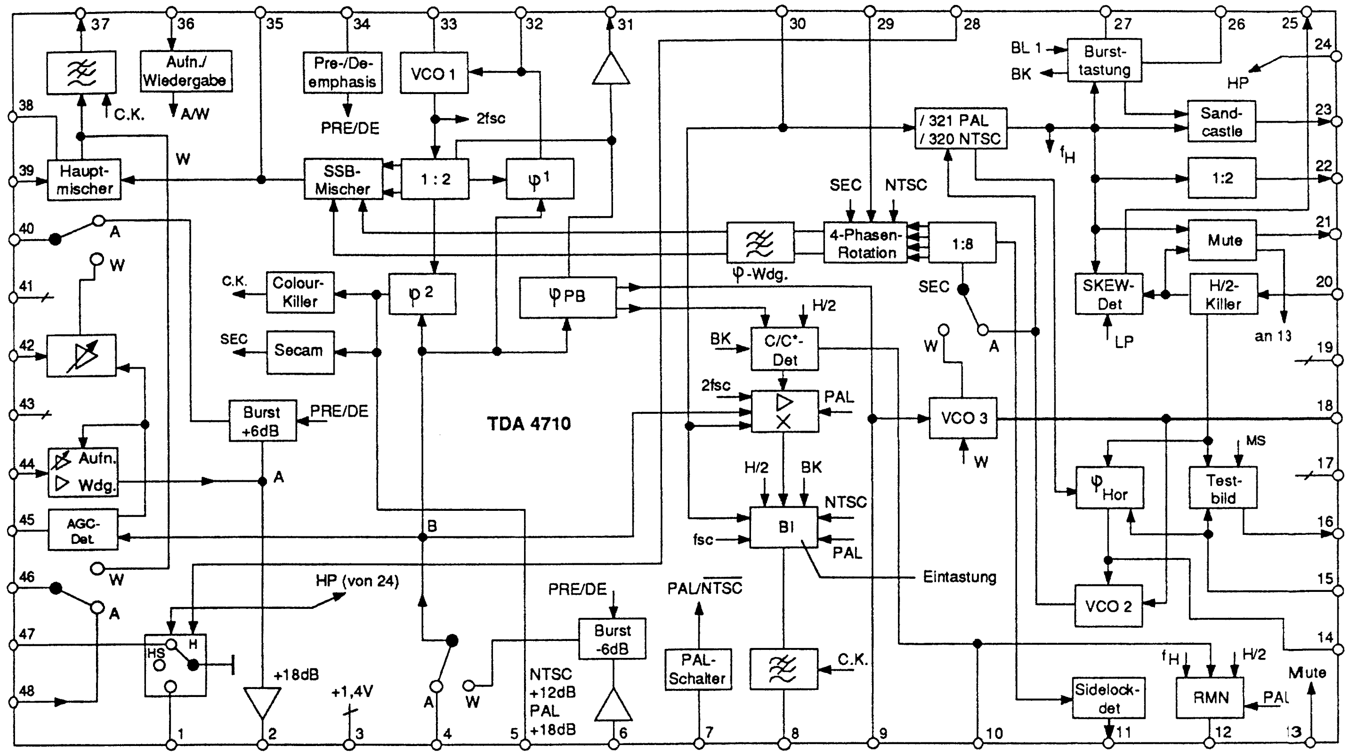
**BA 7021**


BA 7021
IN
CTL
IN
CTL
GND
IN
MUTE
OUT
VCC

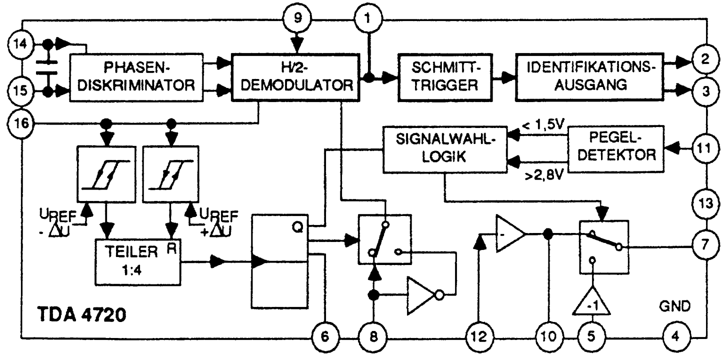
**MSM 6987 RS**


IN
CLAMP
CCD 281.5 STAGE
S/H
OUT
AUTO BIAS
CLOCK DRIVER
DUTY CONTROL
V REF
AMPLIFIER
MSM 6987 RS
CLK
COMP
VOB
VDD
VSS
VCC

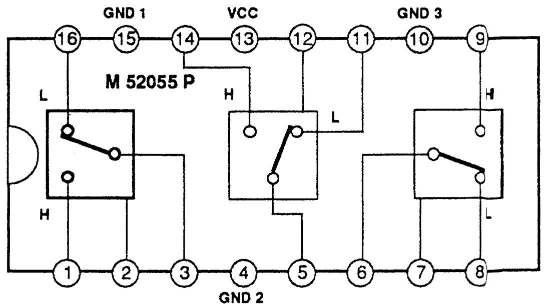
**TDA 4710**


Aufn./ Wiedergabe
Pre-/De-emphasis
VCO 1
C.K.
A/W
PRE/DE
2fsc
Haupt-mischer
SSB-Mischer
1 : 2
φ1
BL 1
BK
Burst-tastung
HP
Sand-castle
/ 321 PAL / 320 NTSC
1:2
SEC
NTSC
4-Phasen-Rotation
1:8
Mute
φ -Wdg.
Colour-Killer
φ 2
φ PB
SKEW-Det
H/2-Killer
LP
Secam
C/C*-Det
Burst +6dB
PAL
TDA 4710
VCO 3
Aufn.
Wdg.
H/2
BK
NTSC
Test-bild
AGC-Det.
BI
φ Hor
MS
fsc
PAL
Eintastung
HP (von 24)
PRE/DE
PAL/NTSC
VCO 2
Burst -6dB
PAL-Schalter
+18dB
+1,4V
NTSC +12dB PAL +18dB
Sidelock-det
RMN
Mute
fH
H/2
an 13

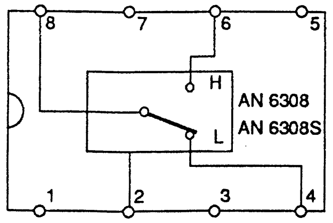
**TDA 4720**


PHASEN-DISKRIMINATOR
H/2-DEMODULATOR
SCHMITT-TRIGGER
IDENTIFIKATIONS-AUSGANG
SIGNALWAHL-LOGIK
PEGEL-DETEKTOR
< 1,5V
>2,8V
UREF - ΔU
UREF + ΔU
TEILER 1:4
TDA 4720
GND

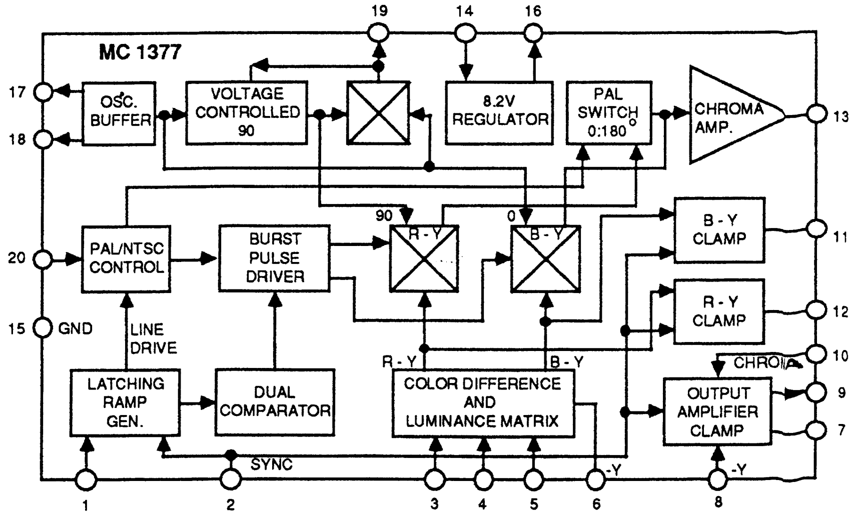
**M 52055 P**

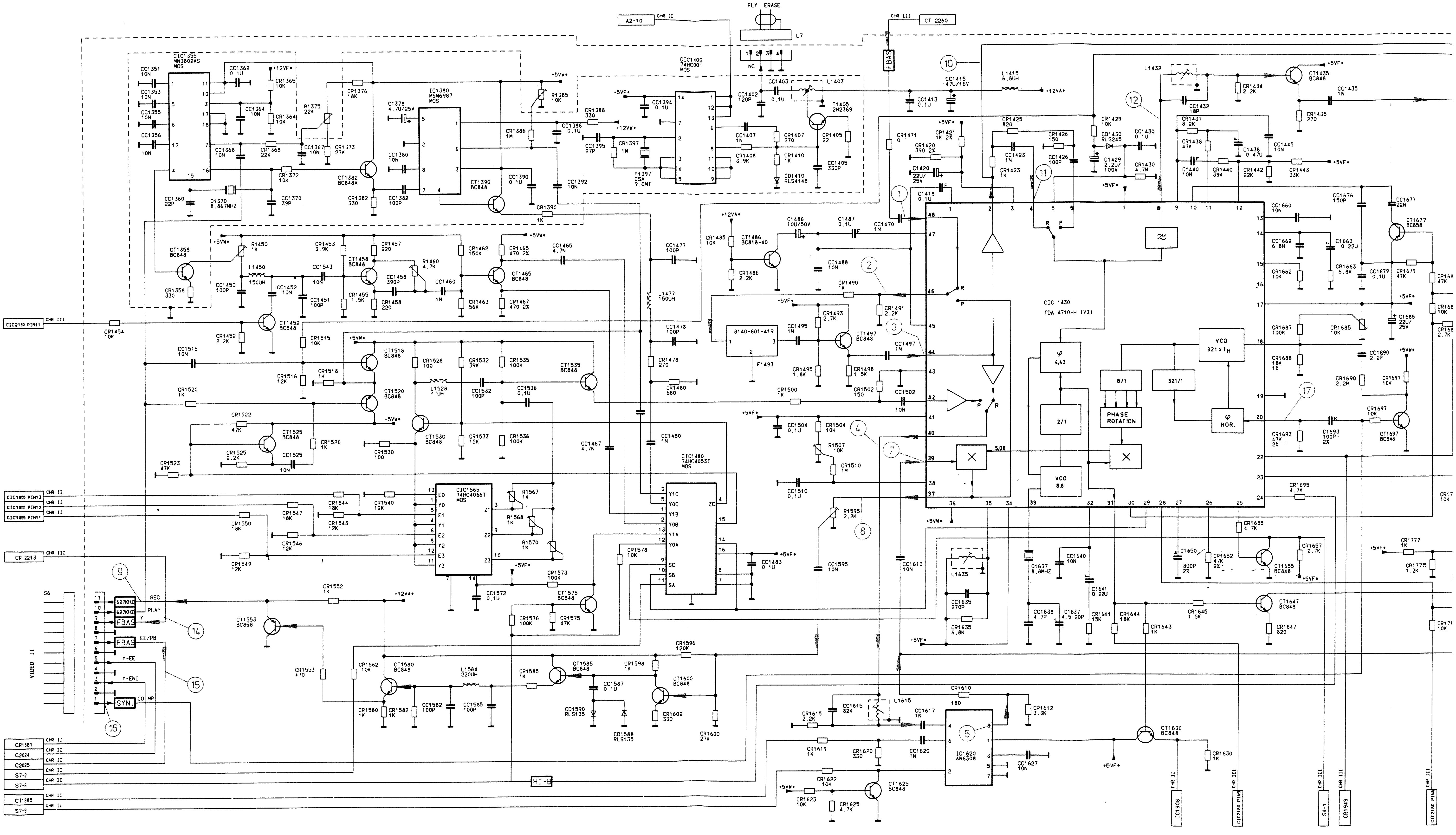

GND 1
VCC
GND 3
M 52055 P
L
H
GND 2

**AN 6308**

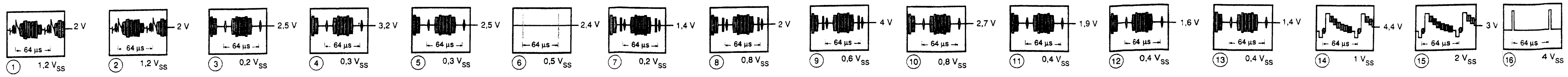

H
L
AN 6308
AN 6308S

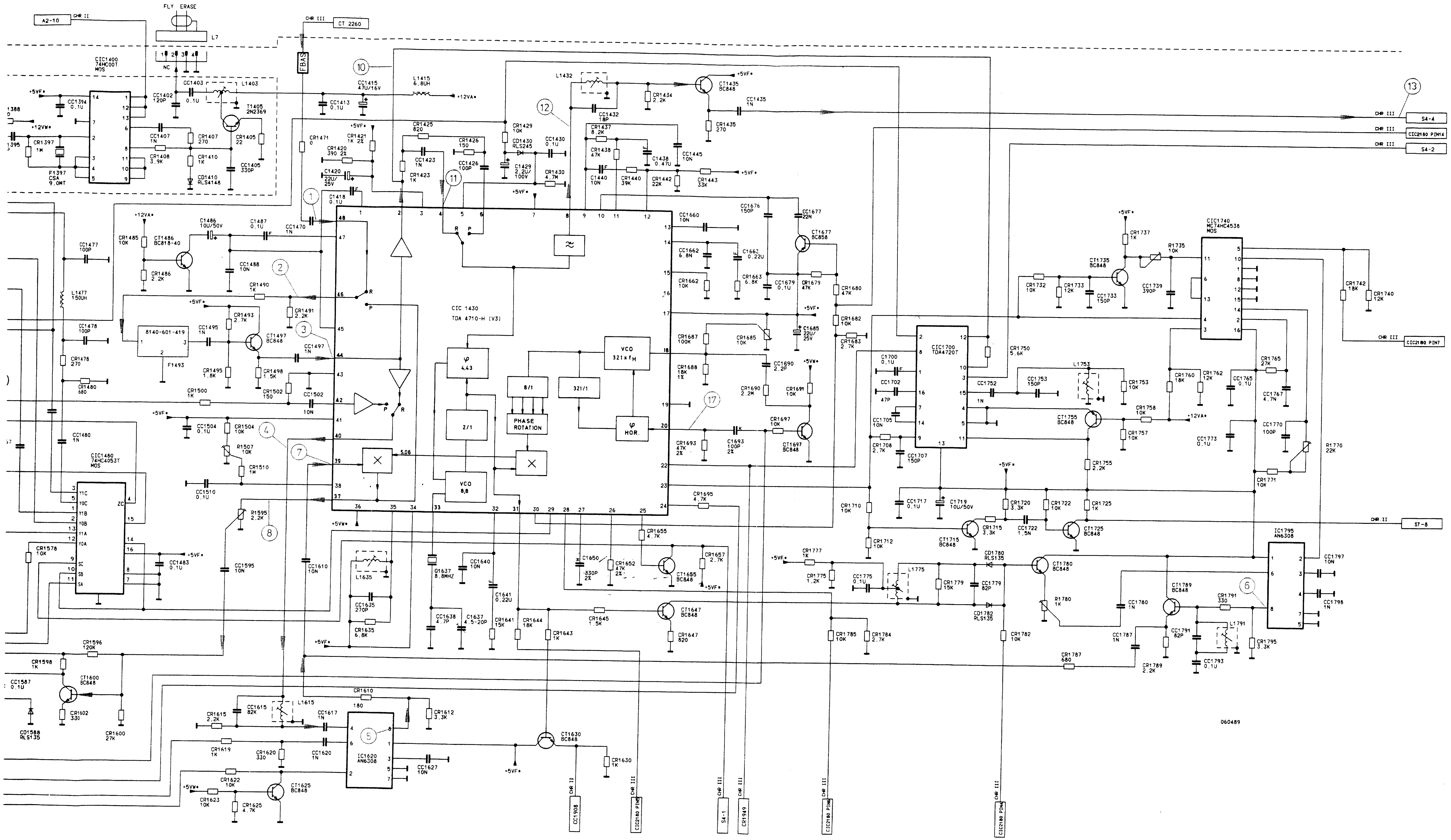
**MC 1377**

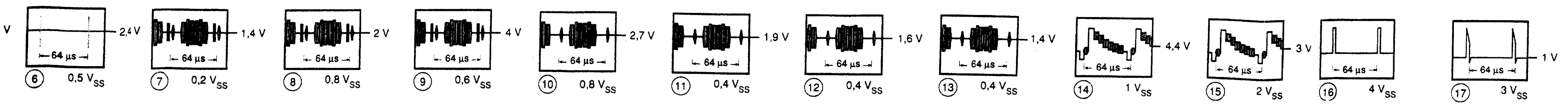

MC 1377
OSC. BUFFER
VOLTAGE CONTROLLED 90
8.2V REGULATOR
PAL SWITCH 0:180
CHROMA AMP.
PAL/NTSC CONTROL
BURST PULSE DRIVER
B - Y CLAMP
R - Y CLAMP
GND
LINE DRIVE
LATCHING RAMP GEN.
DUAL COMPARATOR
COLOR DIFFERENCE AND LUMINANCE MATRIX
OUTPUT AMPLIFIER CLAMP
CHROMA
SYNC
-Y


FLY ERASE
L7
A2-10
CT 2260
CHR II
CHR III
CIC1355 MN3802AS MOS
IC1380 MSM6987 MOS
CIC1400 74HC00T MOS
T1405 2N2369
CIC 1430 TDA 4710-H (V3)
VCO 321 x f_H
VCO 8,8
PHASE ROTATION
8/1
321/1
2/1
HOR.
CIC1565 74HC4066T MOS
CIC1480 74HC4053T MOS
IC1620 AN6308
8140-601-419
F1493
Q1370 8.867MHZ
F1397 CSA 9.0MT
Q1637 8.8MHZ
VIDEO II
S6
REC
PLAY
EE/PB
Y-EE
Y-ENC
COMP
627KHZ
FBAS
SYN.
HI-B
CIC2180 PIN11
CIC1855 PIN13
CIC1855 PIN12
CIC1855 PIN11
CR 2213
CR1881
C2024
C2025
S7-2
S7-6
CT1885
S7-9
CC1908
CIC2180 PIN6
S4-1
CR1949
CIC2180 PIN8
+5VF•
+5VM•
+12VA•
+12VM•
+12VF•

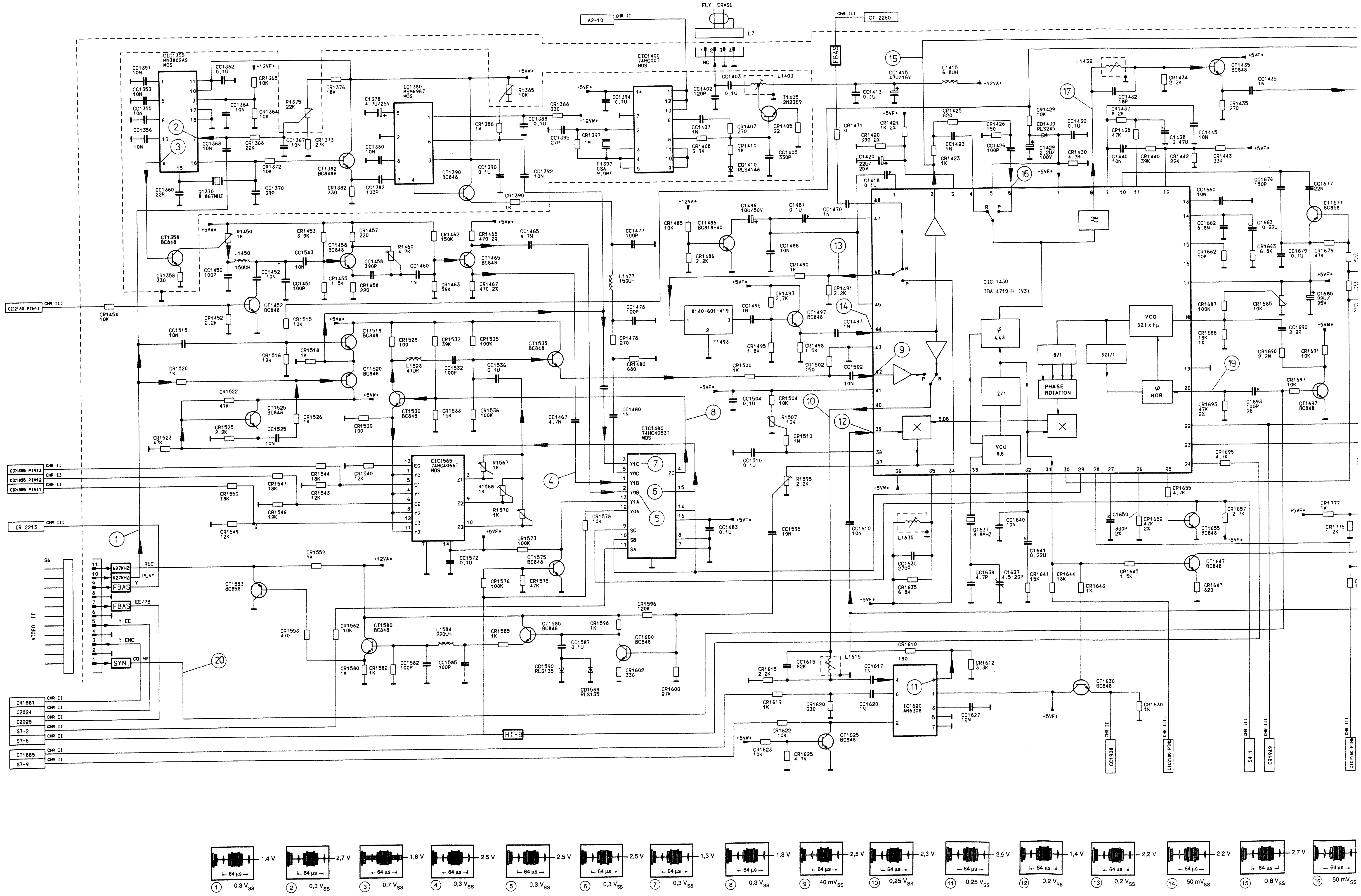
Aufnahme (S-VHS) - HF
Record (S-VHS) - RF
Registrazione (S-VHS) - AF



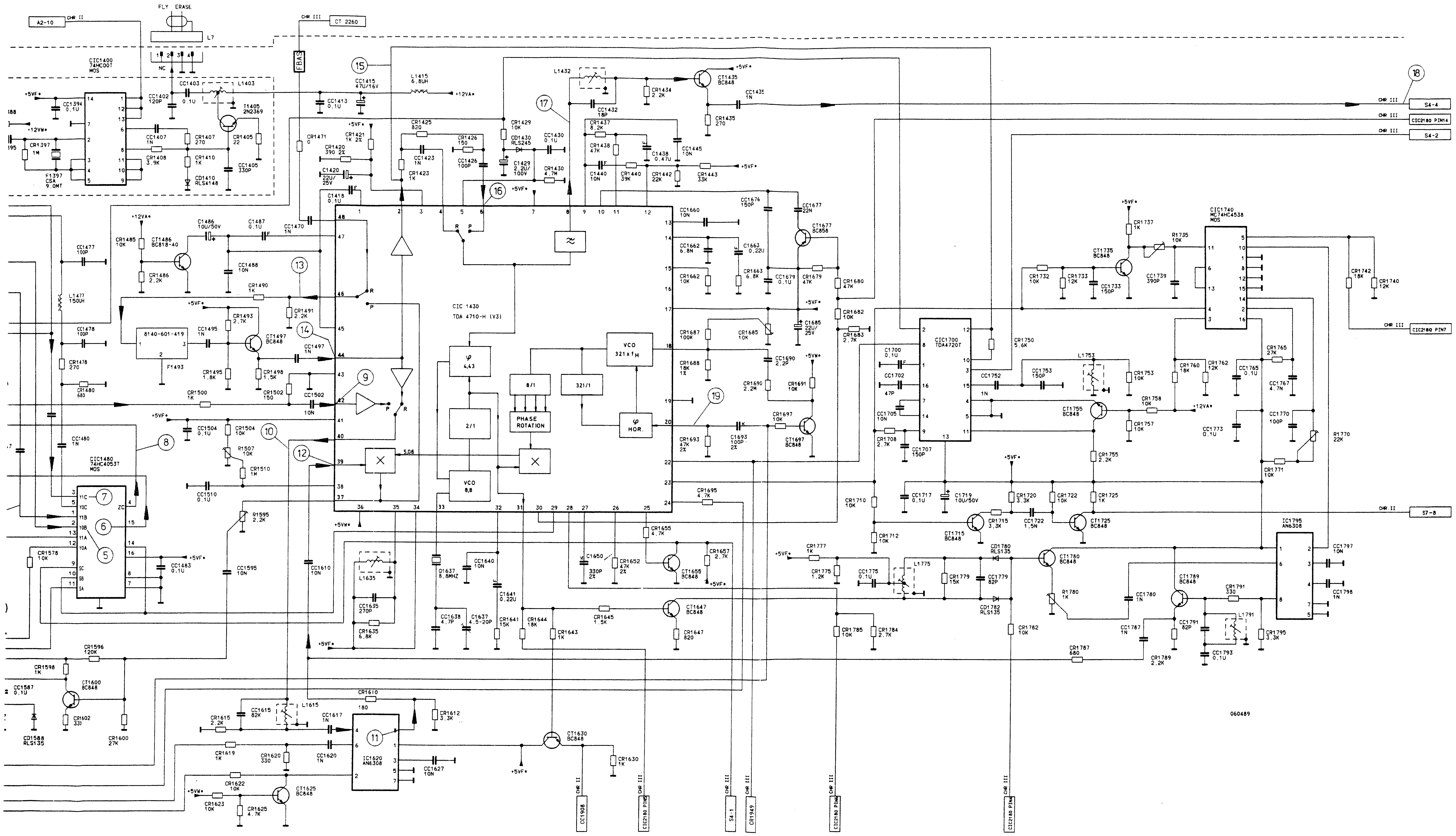

FLY ERASE
L7
A2-10
CHR III
CT 2260
FBAS
CIC1400 74HC00T MOS
T1405 2N2369
F1397 CSA 9,0MT
L1415 6,8UH
+12VA•
+5VF•
+12VM•
CT1435 BC848
L1432
CIC 1430
TDA 4710-H (V3)
φ 4,43
2/1
VCO 8,8
8/1
PHASE ROTATION
321/1
VCO 321 x fH
φ HOR.
8140-601-419
F1493
CT1486 BC818-40
CT1497 BC848
L1477 150UH
CIC1480 74HC4053T MOS
CT1600 BC848
CD1588 RLS135
L1615
IC1620 AN6308
CT1625 BC848
CT1630 BC848
L1635
G1637 8,8MHZ
CT1647 BC848
CT1655 BC848
CT1677 BC858
CT1697 BC848
CIC1700 TDA4720T
CT1715 BC848
CT1725 BC848
CT1735 BC848
CIC1740 MC74HC4538 MOS
L1753
CT1755 BC848
L1775
CD1780 RLS135
CD1782 RLS135
CT1780 BC848
CT1789 BC848
L1791
IC1795 AN6308
S4-4
CIC2180 PIN14
S4-2
CIC2180 PIN7
S7-8
CC1908
CIC2180 PIN1
S4-1
CR1949
CIC2180 PIN6
CIC2180 PIN4
060489

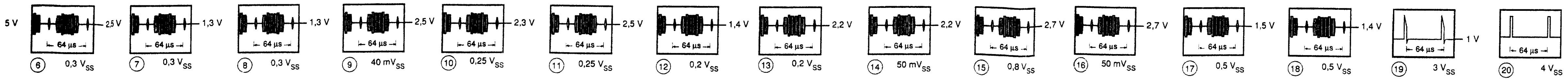


## Chroma 1
## Croma 1


CIC1355 MN3802AS MOS
CT1358 BC848
CIC1380 MSM6987 MOS
CIC1400 74HC00T MOS
T1405 2N2369
FLY ERASE
L7
A2-10
CHR II
CHR III
CT 2260
FBAS
CT1435 BC848
CIC 1430 TDA 4710-H (V3)
VCO 321 x f H
PHASE ROTATION
8/1
321/1
φ HOR.
φ 4,43
2/1
VCO 8,8
CT1486 BC818-40
8140-601-419
F1493
CT1497 BC848
CIC1480 74HC4053T MOS
CIC1565 74HC4066T MOS
CT1452 BC848
CT1458 BC848
CT1465 BC848
CT1518 BC848
CT1520 BC848
CT1525 BC848
CT1530 BC848
CT1535 BC848
CT1553 BC858
CT1575 BC848
CT1580 BC848
CT1585 BC848
CT1600 BC848
IC1620 AN6308
CT1625 BC848
CT1630 BC848
CT1647 BC848
CT1655 BC848
CT1677 BC858
CT1697 BC848
Q1370 8.867MHZ
Q1637 8.8MHZ
S6
VIDEO II
627KHZ REC
627KHZ PLAY
FBAS Y
FBAS EE/PB
Y-EE
Y-ENC
SYN. COMP
HI-B
CIC2180 PIN11
CIC1856 PIN13
CIC1856 PIN12
CIC1856 PIN11
CR 2213
CR1881
C2024
C2025
S7-2
S7-6
CT1885
S7-9
CC1908
CIC2180 PIN5
S4-1
CR1949
CIC2180 PIN6
+5VW•
+5VF•
+12VF•
+12VA•
+12VW•
1,4 V ① 0,3 $V_{SS}$
2,7 V ② 0,3 $V_{SS}$
1,6 V ③ 0,7 $V_{SS}$
2,5 V ④ 0,3 $V_{SS}$
2,5 V ⑤ 0,3 $V_{SS}$
2,5 V ⑥ 0,3 $V_{SS}$
1,3 V ⑦ 0,3 $V_{SS}$
1,3 V ⑧ 0,3 $V_{SS}$
2,5 V ⑨ 40 m$V_{SS}$
2,3 V ⑩ 0,25 $V_{SS}$
2,5 V ⑪ 0,25 $V_{SS}$
1,4 V ⑫ 0,2 $V_{SS}$
2,2 V ⑬ 0,2 $V_{SS}$
2,2 V ⑭ 50 m$V_{SS}$
2,7 V ⑮ 0,8 $V_{SS}$
⑯ 50 m$V_{SS}$
64 µs

**Chrom**
**Croma**


FLY ERASE
L7
A2-10
CHR II
CHR III
CT 2260
FBAS
CIC1400 74HC00T MOS
CC1394 0,1U
CR1397 1M
F1397 CSA 9.0MT
CC1402 120P
CC1403 0,1U
L1403
T1405 2N2369
CC1407 1N
CR1407 270
CR1405 22
CR1408 3,9K
CR1410 1K
CD1410 RLS4148
CC1405 330P
CC1413 0,1U
CC1415 47U/16V
L1415 6,8UH
+12VA•
CR1471 0
CR1421 1K 2%
CR1420 390 2%
C1420 22U/25V
CC1418 0,1U
CR1425 820
CC1423 1N
CR1423 1K
CR1426 150
CC1426 100P
CR1429 10K
CD1430 RLS245
CC1430 0,1U
C1429 2,2U/100V
CR1430 4,7M
L1432
CC1432 18P
CR1434 2,2K
CT1435 BC848
CC1435 1N
CR1435 270
CR1437 8,2K
CR1438 47K
C1438 0,47U
CC1445 10N
C1440 10N
CR1440 39K
CR1442 22K
CR1443 33K
+5VF•
CIC 1430 TDA 4710-H (V3)
φ 4,43
2/1
VCO 8,8
8/1
PHASE ROTATION
321/1
VCO 321 x f_H
φ HOR.
5,06
CC1660 10N
CC1662 6,8N
C1663 0,22U
CR1662 10K
CR1663 6,8K
CC1679 0,1U
CR1679 47K
CC1676 150P
CC1677 22N
CT1677 BC858
CR1680 47K
CR1682 10K
CR1683 2,7K
C1685 22U/25V
CR1685 10K
CR1687 100K
CR1688 18K 1%
CC1690 2,2P
CR1690 2,2M
CR1691 10K
CR1693 47K 2%
C1693 100P 2%
CR1697 10K
CT1697 BC848
CR1695 4,7K
CR1655 4,7K
CT1655 BC848
CR1657 2,7K
C1650 330P 2%
CR1652 47K 2%
CT1647 BC848
CR1645 1,5K
CR1647 820
CR1644 18K
CR1643 1K
CR1641 15K
C1641 0,22U
CC1640 10N
Q1637 8,8MHZ
CC1638 4,7P
C1637 4,5-20P
L1635
CC1635 270P
CR1635 6,8K
CC1610 10N
CR1610 180
CR1612 3,3K
CC1615 82K
CR1615 2,2K
L1615
CC1617 1N
IC1620 AN6308
CR1619 1K
CR1620 330
CC1620 1N
CC1627 10N
CT1630 BC848
CR1630 1K
CR1622 10K
CR1623 10K
CT1625 BC848
CR1625 4,7K
+5VM•
CR1596 120K
CR1598 1K
CT1600 BC848
CC1587 0,1U
CD1588 RLS135
CR1602 330
CR1600 27K
CR1578 10K
CIC1480 74HC4053T MOS
CC1483 0,1U
CC1595 10N
R1595 2,2K
CC1510 0,1U
CC1504 0,1U
CR1504 10K
R1507 10K
CR1510 1M
CR1500 1K
CC1502 10N
CR1502 150
CR1498 1,5K
CR1495 1,8K
CC1495 1N
CT1497 BC848
CR1493 2,7K
CR1491 2,2K
CC1497 1N
8140-601-419
F1493
CR1490 1K
CC1488 10N
CC1487 0,1U
C1486 10U/50V
CT1486 BC818-40
CR1485 10K
CR1486 2,2K
CC1470 1N
CC1477 100P
L1477 150UH
CC1478 100P
CR1478 270
CR1480 680
CC1480 1N
CIC1700 TDA4720T
C1700 0,1U
CC1702 47P
CC1705 10N
CR1708 2,7K
CC1707 150P
CC1717 0,1U
C1719 10U/50V
CR1710 10K
CR1712 10K
CT1715 BC848
CR1715 3,3K
CC1722 1,5N
CR1720 3,3K
CR1722 10K
CT1725 BC848
CR1725 1K
CR1755 2,2K
CT1755 BC848
CR1757 10K
CR1758 10K
CR1753 10K
L1753
CC1753 150P
CC1752 1N
CR1750 5,6K
CR1737 1K
CT1735 BC848
CR1732 10K
CR1733 12K
CC1733 150P
CC1739 390P
R1735 10K
CIC1740 MC74HC4538 MOS
CR1742 18K
CR1740 12K
CR1760 18K
CR1762 12K
CC1765 0,1U
CR1765 27K
CC1767 4,7N
CC1770 100P
R1770 22K
CR1771 10K
CC1773 0,1U
CR1777 1K
CR1775 1,2K
CC1775 0,1U
L1775
CR1779 15K
CC1779 82P
CD1780 RLS135
CD1782 RLS135
CT1780 BC848
R1780 1K
CC1780 1N
CT1789 BC848
CR1791 330
CC1791 82P
L1791
CC1793 0,1U
CR1795 3,3K
CR1789 2,2K
CC1787 1N
CR1787 680
CR1782 10K
CR1785 10K
CR1784 2,7K
IC1795 AN6308
CC1797 10N
CC1798 1N
S4-4
CIC2180 PIN14
S4-2
CIC2180 PIN7
S7-8
CC1908
CIC2180 PIN6
S4-1
CR1949
060489



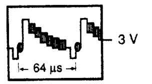
**Wiedergabe (PAL - NP)**
**Playback (PAL - NP)**
**Riproduzione (PAL - NP)**

## Chroma 1
## Croma 1

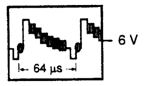
Aufnahme (HF - EE)
Record (RF - EE)
Registrazione (AF - EE)

**S-VHS-Buchse**
**S-VHS-Socket**
**Presa S-VHS**

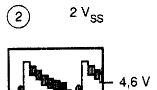
**EURO-AV - Buchse / Modulator**
**EURO-AV socket / Modulator**
**Presa EURO-AV / Modulatore**



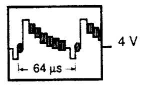
① 2 $V_{SS}$



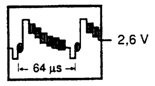
② 2 $V_{SS}$



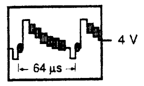
③ 2 $V_{SS}$



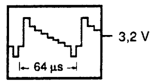
④ 2 $V_{SS}$
AV 2 offen/ open/ aperto



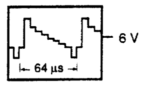
⑤ 1 $V_{SS}$



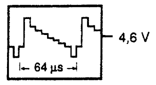
⑥ 2 $V_{SS}$
AV 1 offen/ open/ aperto



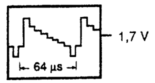
⑦ 2 $V_{SS}$



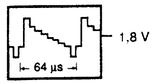
⑧ 2 $V_{SS}$



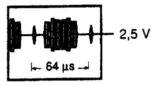
⑨ 2 $V_{SS}$



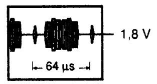
⑩ 2 $V_{SS}$



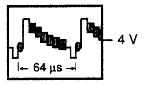
⑪ 2 $V_{SS}$



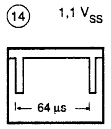
⑫ 1,1 $V_{SS}$



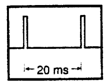
⑬ 1 $V_{SS}$



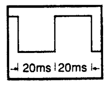
⑭ 1,1 $V_{SS}$



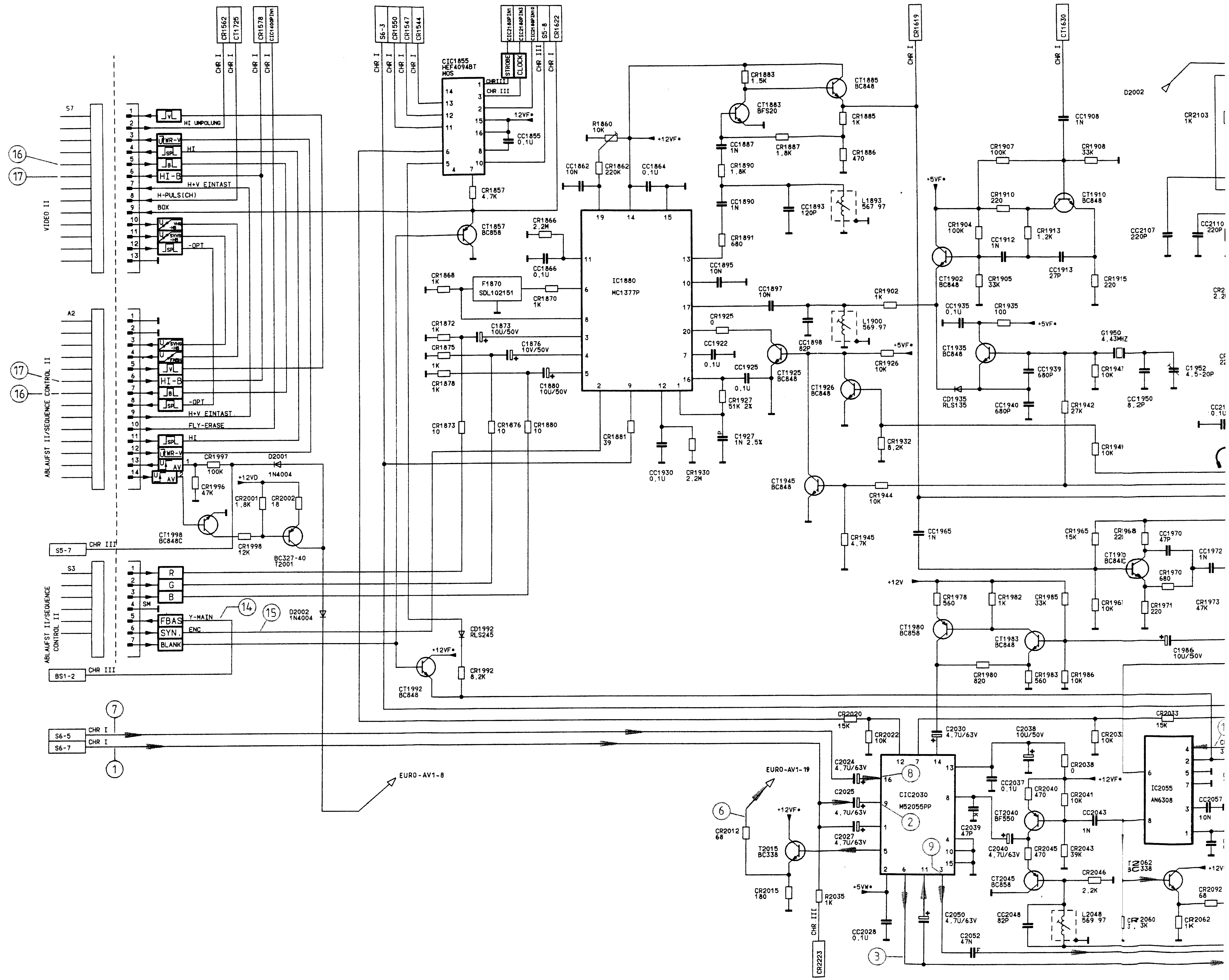
⑮ 0,8 $V_{SS}$

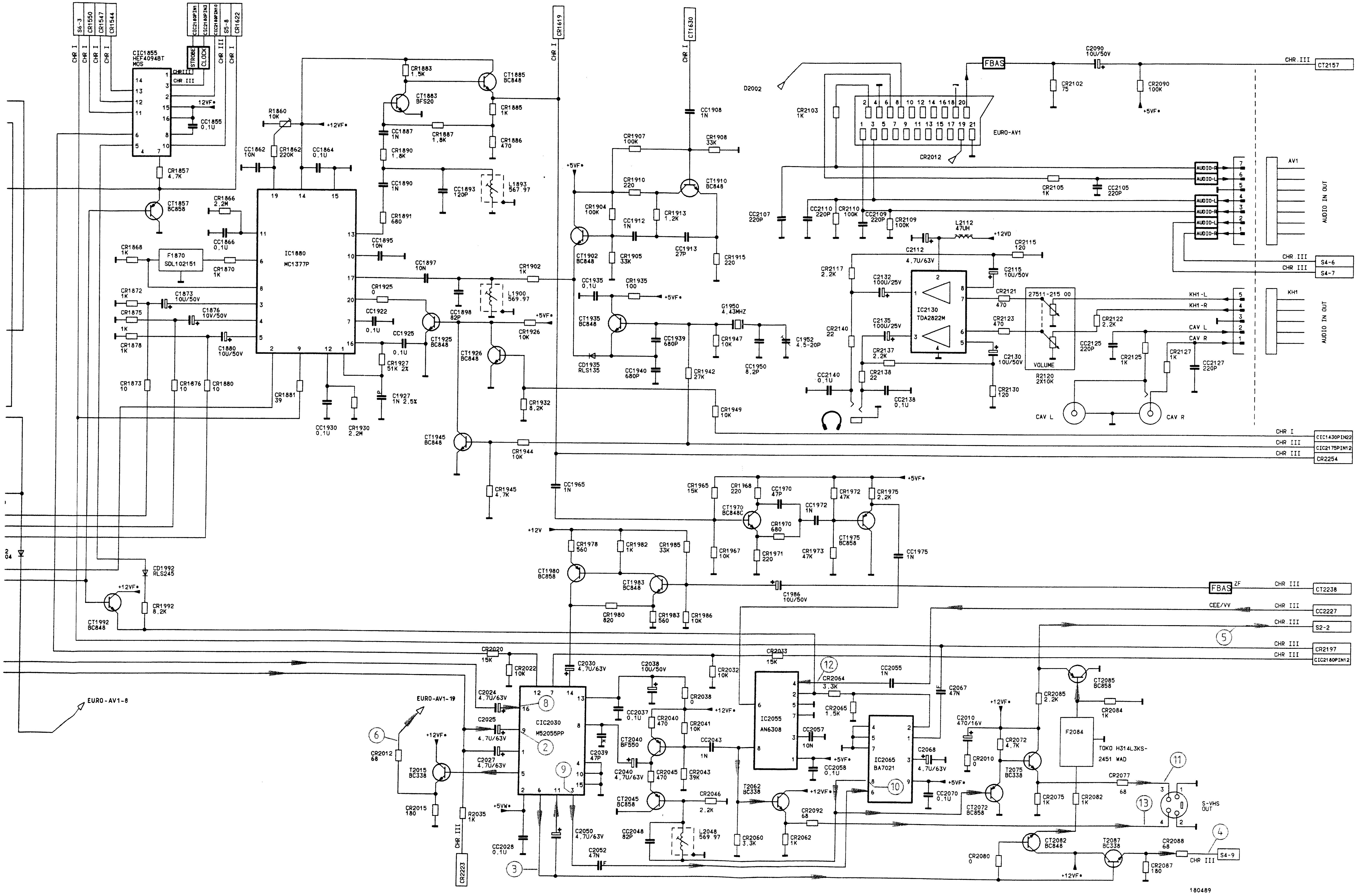


⑯ 5 $V_{SS}$



⑰ 5 $V_{SS}$


S7
VIDEO II
A2
ABLAUFST II/SEQUENCE CONTROL II
S3
ABLAUFST II/SEQUENCE CONTROL II
HI UMPOLUNG
HI
H+V EINTAST
H-PULS(CH)
BOX
-OPT
FLY-ERASE
Y-MAIN
ENC
R
G
B
SM
FBAS
SYN.
BLANK
S5-7
BS1-2
S6-5
S6-7
CHR I
CHR III
EURO-AV1-8
EURO-AV1-19
CR1562
CT1725
CR1578
CIC1400P1H1
S6-3
CR1550
CR1547
CR1544
CIC1855
HEF4094BT
MOS
STROBE
CLOCK
S5-8
CR1622
CT1857
BC858
IC1880
MC1377P
F1870
SDL102151
R1860
CT1883
BFS20
CT1885
BC848
L1893
567 97
L1900
569 97
CT1925
BC848
CT1926
BC848
CT1945
BC848
CR1619
CR1630
CT1910
BC848
CT1902
BC848
CT1935
BC848
CD1935
RLS135
G1950
4,43MHZ
D2002
CT1970
BC848C
CT1980
BC858
CT1983
BC848
CT1992
BC848
CD1992
RLS245
CT1998
BC848C
BC327-40
T2001
D2001
1N4004
D2002
1N4004
CIC2030
M52055PP
CT2040
BF550
CT2045
BC858
L2048
569 97
IC2055
AN6308
T2015
BC338
T2062
BC338
CR2223
+12VF
+5VF
+12V
+5VW
+12VD

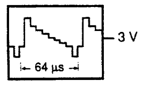

S6-3
CR1550
CR1547
CR1544
CIC2180PIN1
CIC2180PIN3
CIC2180PIN10
S5-8
CR1622
STROBE
CLOCK
CIC1855
HEF4094BT
MOS
CT1857
BC858
CR1857
4,7K
R1860
10K
IC1880
MC1377P
F1870
SDL102151
CT1883
BFS20
CT1885
BC848
L1893
567 97
L1900
569.97
CT1925
BC848
CT1926
BC848
CT1945
BC848
CR1619
CT1630
CT1902
BC848
CT1910
BC848
CT1935
BC848
CD1935
RLS135
G1950
4,43MHZ
C1952
4,5-20P
D2002
CR2012
EURO-AV1
FBAS
C2090
10U/50V
CR2102
75
CR2090
100K
CT2157
AUDIO-R
AUDIO-L
AV1
AUDIO IN OUT
KH1
IC2130
TDA2822M
L2112
47UH
27511-215 00
VOLUME
R2120
2X10K
KH1-L
KH1-R
CAV L
CAV R
S4-6
S4-7
CIC1430PIN22
CIC2175PIN12
CR2254
CT1970
BC848C
CT1975
BC858
CC1975
1N
CT1980
BC858
CT1983
BC848
C1986
10U/50V
CT1992
BC848
CD1992
RLS245
CT2238
CEE/VV
CC2227
S2-2
CR2197
CIC2180PIN12
EURO-AV1-8
EURO-AV1-19
CIC2030
M52055PP
T2015
BC338
CR2223
CT2040
BF550
CT2045
BC858
L2048
569 97
IC2055
AN6308
IC2065
BA7021
CT2062
BC338
F2084
TOKO H314L3KS-
2451 WAD
T2075
BC338
CT2072
BC858
CT2082
BC848
T2087
BC338
CT2085
BC858
S-VHS
OUT
S4-9
+12VF•
+5VF•
+12V
CHR I
CHR III
180489

## Chroma 2
## Croma 2

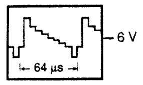
Wiedergabe
Playback
Riproduzione

**S-VHS-Buchse**
**S-VHS-Socket**
**Presa S-VHS**

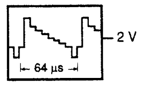
**EURO-AV - Buchse / Modulator**
**EURO-AV socket / Modulator**
**Presa EURO-AV / Modulatore**



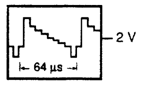
① 2,3 $V_{SS}$



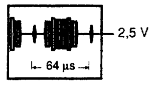
② 2,3 $V_{SS}$



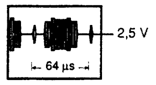
③ 2,3 $V_{SS}$



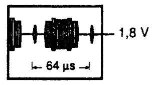
④ 2,3 $V_{SS}$



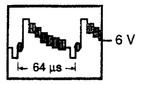
⑤ 1,5 $V_{SS}$



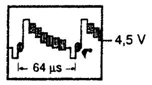
⑥ 1,3 $V_{SS}$



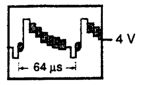
⑦ 1,2 $V_{SS}$



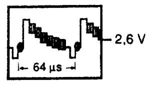
⑧ 2,2 $V_{SS}$



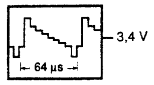
⑨ 2,2 $V_{SS}$



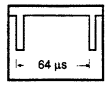
⑩ 2,2 $V_{SS}$
AV 2 offen/ open/
aperto



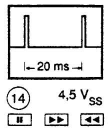
⑪ 1 $V_{SS}$



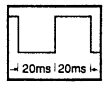
⑫ 1 $V_{SS}$



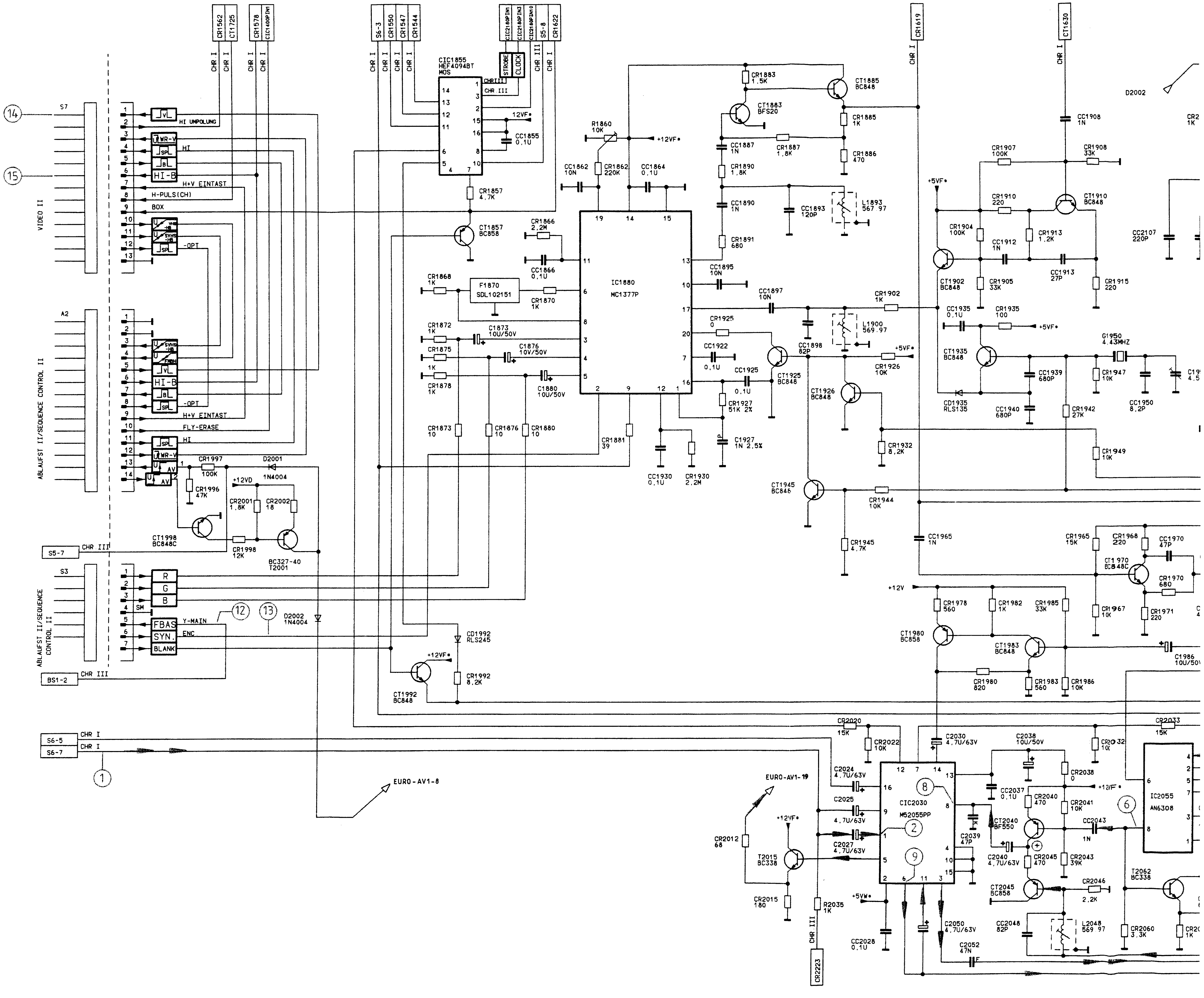
⑬ 0,8 $V_{SS}$



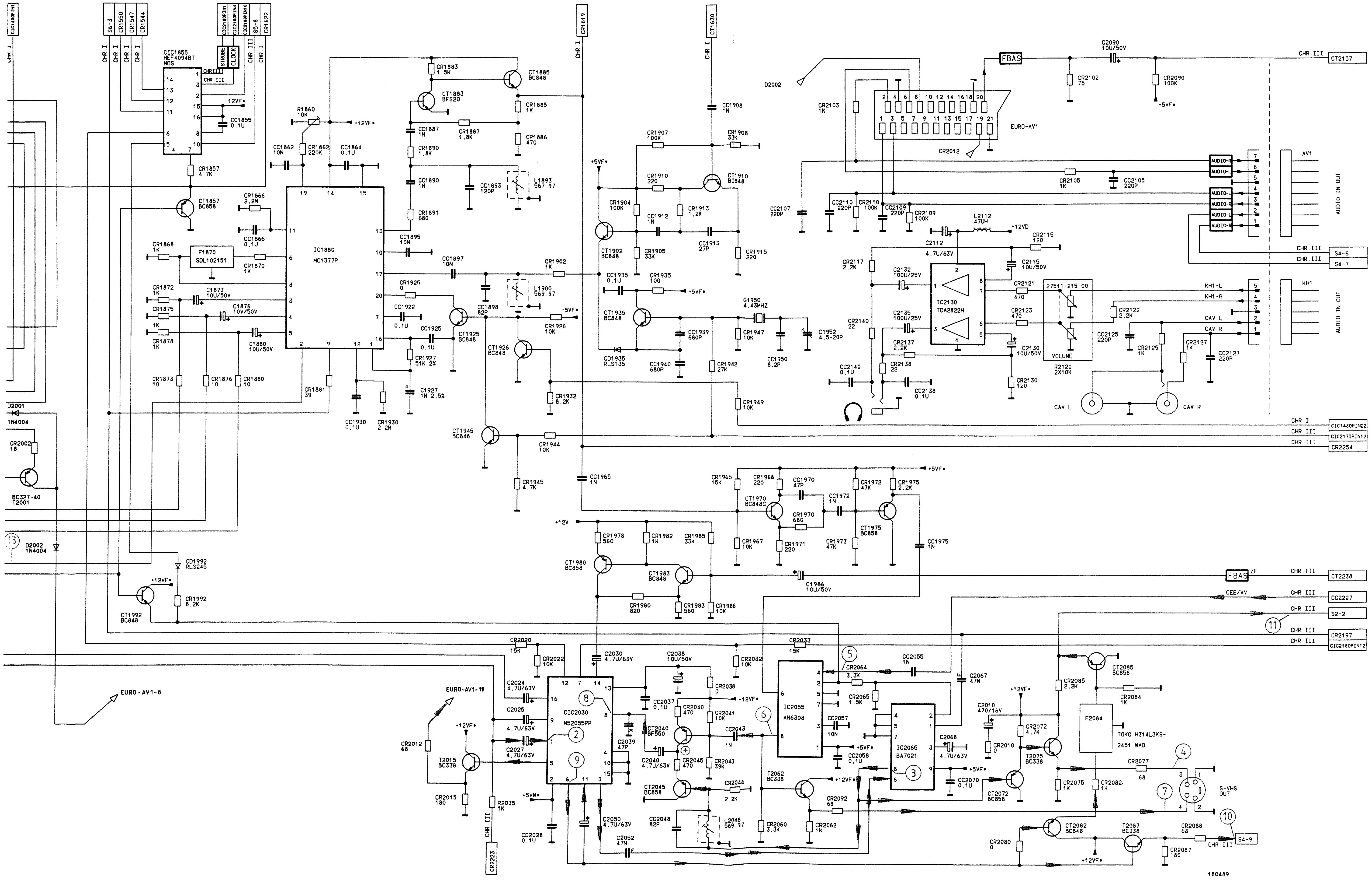
⑭ 4,5 $V_{SS}$



⑮ 5 $V_{SS}$
5 ms/cm

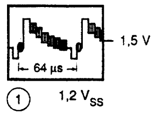

CR1562
CT1725
CR1578
CIC140PIN1
S6-3
CR1550
CR1547
CR1544
CIC2160PIN1
CIC2160PIN3
CIC2180PIN10
S5-8
CR1622
CR1619
CT1630
CHR I
CHR III
⑭
⑮
S7
VIDEO II
HI UMPOLUNG
WR-V
SPL
BL
HI-B
H+V EINTAST
H-PULS(CH)
BOX
SVHS
-OPT
A2
ABLAUFST II/SEQUENCE CONTROL II
FLY-ERASE
HI
AV
CR1997 100K
D2001 1N4004
+12VD
CR1996 47K
CR2001 1,8K
CR2002 18
CT1998 BC848C
CR1998 12K
BC327-40 T2001
S5-7
S3
R
G
B
SM
FBAS
SYN.
BLANK
Y-MAIN
ENC
⑫
⑬
D2002 1N4004
BS1-2
CIC1855 HEF4094BT MOS
STROBE
CLOCK
12VF
CC1855 0,1U
CR1857 4,7K
CT1857 BC858
R1860 10K
+12VF
CC1862 10N
CR1862 220K
CC1864 0,1U
CR1866 2,2M
CC1866 0,1U
CR1868 1K
F1870 SDL102151
CR1870 1K
CR1872 1K
C1873 10U/50V
CR1875 1K
C1876 10V/50V
CR1878 1K
C1880 10U/50V
IC1880 MC1377P
CR1873 10
CR1876 10
CR1880 10
CR1881 39
CC1930 0,1U
CR1930 2,2M
CD1992 RLS245
CT1992 BC848
CR1992 8,2K
CR1883 1,5K
CT1885 BC848
CT1883 BFS20
CR1885 1K
CC1887 1N
CR1887 1,8K
CR1886 470
CR1890 1,8K
CC1890 1N
CC1893 120P
L1893 567 97
CR1891 680
CC1895 10N
CC1897 10N
CR1902 1K
CR1925 0
CC1922 0,1U
CC1925 0,1U
CC1898 82P
L1900 569.97
+5VF
CR1926 10K
CT1925 BC848
CR1927 51K 2%
C1927 1N 2,5%
CT1926 BC848
CR1932 8,2K
CT1945 BC846
CR1944 10K
CR1945 4,7K
D2002
CC1908 1N
CR1907 100K
CR1908 33K
CR1910 220
CT1910 BC848
CR1904 100K
CC1912 1N
CR1913 1,2K
CC1913 27P
CR1915 220
CT1902 BC848
CR1905 33K
CC1935 0,1U
CR1935 100
CT1935 BC848
CC1939 680P
CR1947 10K
G1950 4,43MHZ
CC1950 8,2P
CD1935 RLS135
CC1940 680P
CR1942 27K
CR1949 10K
CC2107 220P
CC1965 1N
CR1965 15K
CR1968 220
CC1970 47P
CT1970 BC848C
CR1970 680
+12V
CR1978 560
CR1982 1K
CR1985 33K
CR1967 10K
CR1971 220
CT1980 BC858
CT1983 BC848
CR1980 820
CR1983 560
CR1986 10K
C1986 10U/50V
S6-5
S6-7
①
EURO-AV1-8
CR2020 15K
CR2022 10K
C2030 4,7U/63V
CC2038 10U/50V
CR2033 15K
CR2032 10
EURO-AV1-19
C2024 4,7U/63V
C2025 4,7U/63V
C2027 4,7U/63V
CIC2030 M52055PP
⑧
②
⑨
CC2037 0,1U
CR2038 0
CR2040 470
CR2041 10K
+12VF
CT2040 BF550
C2039 47P
C2040 4,7U/63V
CR2045 470
CR2043 39K
CC2043 1N
⑥
IC2055 AN6308
CR2012 68
T2015 BC338
CR2015 180
R2035 1K
+5VW
CC2028 0,1U
C2050 4,7U/63V
C2052 47N
CT2045 BC858
CR2046 2,2K
CC2048 82P
L2048 569 97
CR2060 3,3K
T2062 BC338
CR2223

**Chroma**
**Croma 2**

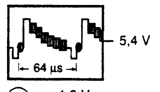

CIC1855
HEF4094BT
MOS
STROBE
CLOCK
IC1880
MC1377P
F1870
SDL102151
CT1857
BC858
CT1883
BFS20
CT1885
BC848
L1893
567 97
L1900
569 97
CT1925
BC848
CT1926
BC848
CT1945
BC848
CT1902
BC848
CT1910
BC848
CT1935
BC848
CD1935
RLS135
G1950
4,43MHZ
EURO-AV1
FBAS
IC2130
TDA2822M
L2112
47UH
27511-215 00
VOLUME
R2120
2X10K
CAV L
CAV R
AUDIO IN OUT
AV1
KH1
AUDIO-R
AUDIO-L
CHR I
CHR III
CT2157
S4-6
S4-7
CIC1430PIN22
CIC2175PIN12
CR2254
CT1970
BC848C
CT1975
BC858
CT1980
BC858
CT1983
BC848
CT2238
CC2227
S2-2
CR2197
CIC2180PIN12
CIC2030
M52055PP
CT2040
BF550
CT2045
BC858
L2048
569 97
IC2055
AN6308
IC2065
BA7021
T2062
BC338
T2015
BC338
CT2072
BC858
T2075
BC338
CT2085
BC858
F2084
TOKO H314L3KS-
2451 WAD
CT2082
BC848
T2087
BC338
S-VHS
OUT
S4-9
EURO-AV1-8
EURO-AV1-19
CR2223
T2001
BC327-40
D2001
1N4004
D2002
1N4004
CD1992
RLS245
CT1992
BC848
+12VF
+5VF
+12V
+12VD
CEE/VV
ZF
180489

## Chroma 2
## Croma 2

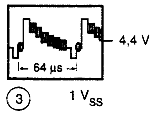
# Aufnahme (S-VHS) - HF
# Record (S-VHS) - RF
# Registrazione (S-VHS) - AF



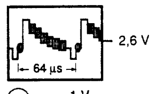
① 1,2 V<sub></sub>



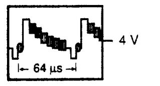
② 1,2 Vss



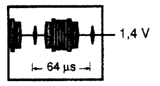
③ 1 Vss



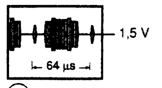
④ 1 Vss



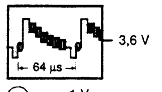
⑤ 2 Vss
AV 2 offen/ open/ aperto



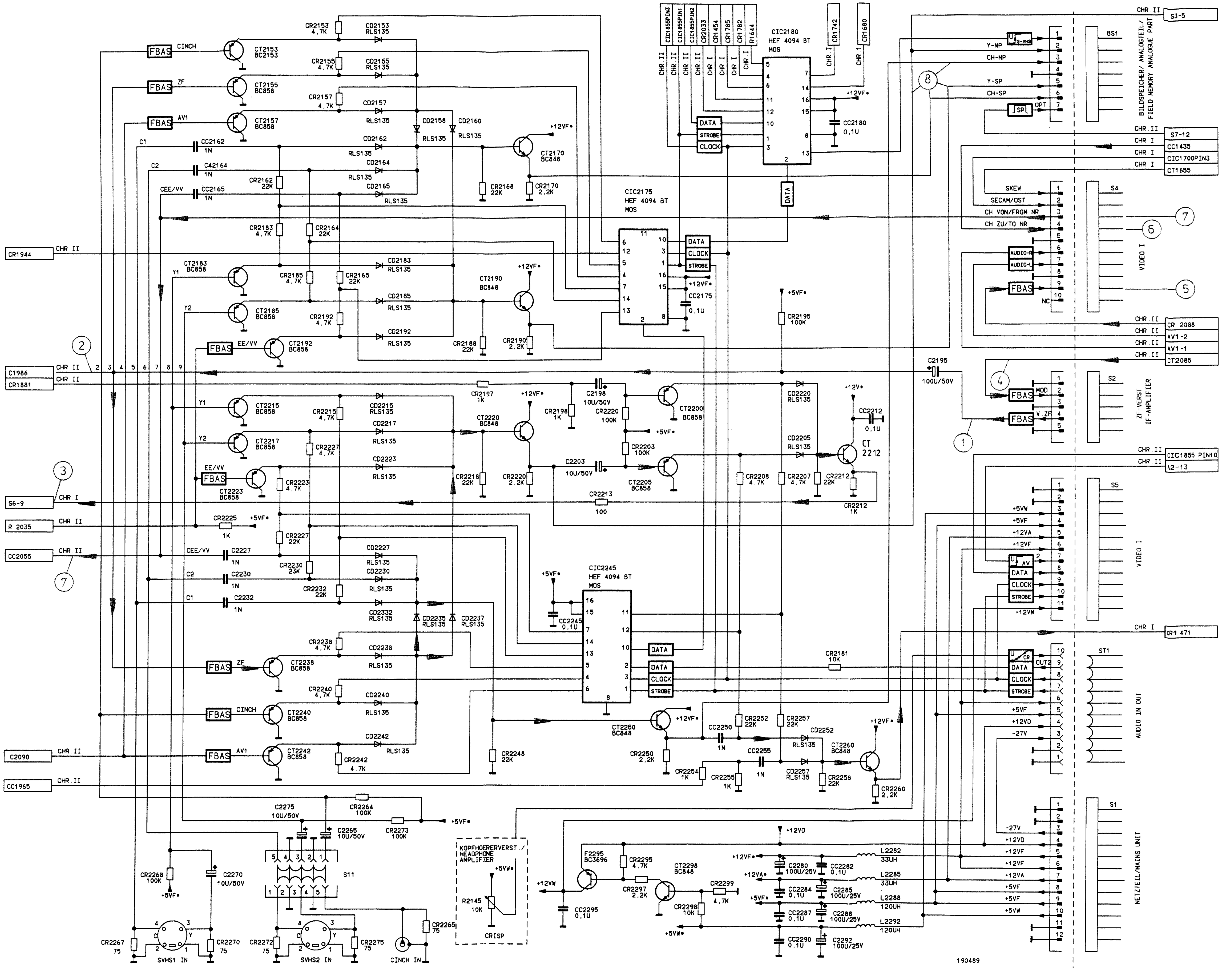
⑥ 0,4 Vss



⑦ 1,2 Vss

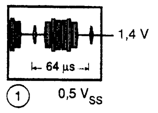


⑧ 1 Vss

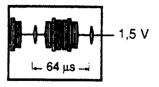

CIC2180
HEF 4094 BT
MOS
CIC2175
HEF 4094 BT
MOS
CIC2245
HEF 4094 BT
MOS
DATA
CLOCK
STROBE
FBAS
CINCH
ZF
AV1
EE/VV
CT2153 BC2153
CT2155 BC858
CT2157 BC858
CT2170 BC848
CT2183 BC858
CT2185 BC858
CT2190 BC848
CT2192 BC858
CT2215 BC858
CT2217 BC858
CT2220 BC848
CT2223 BC858
CT2200 BC858
CT2205 BC858
CT 2212
CT2238 BC858
CT2240 BC858
CT2242 BC858
CT2250 BC848
CT2260 BC848
F2295 BC3696
CT2298 BC848
RLS135
CHR I
CHR II
CR1944
C1986
CR1881
S6-9
R 2035
CC2055
C2090
CC1965
S3-5
S7-12
CC1435
CIC1700PIN3
CT1655
CR 2088
AV1-2
AV1-1
CT2085
CIC1855 PIN10
A2-13
CR1 471
Y-MP
CH-MP
Y-SP
CH-SP
OPT
BS1
BILDSPEICHER/ ANALOGTEIL/ FIELD MEMORY ANALOGUE PART
SKEW
SECAM/OST
CH VON/FROM NR
CH ZU/TO NR
S4
VIDEO I
AUDIO-R
AUDIO-L
NC
S2
MOD
ZF-VERST IF-AMPLIFIER
S5
+5VW
+5VF
+12VA
+12VF
+12VW
AV
ST1
OUT2
+12VD
-27V
AUDIO IN OUT
S1
NETZTEIL/MAINS UNIT
L2282 33UH
L2285 33UH
L2288 120UH
L2292 120UH
S11
SVHS1 IN
SVHS2 IN
CINCH IN
KOPFHOERERVERST / HEADPHONE AMPLIFIER
R2145 10K
CRISP
190489

**Chroma 3**
**Croma 3**

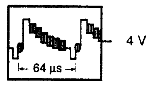
**Wiedergabe (S-VHS / NP)**
**Playback (S-VHS / NP)**
**Riproduzione (S-VHS / NP)**



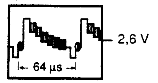
① 0,5 $V_{SS}$



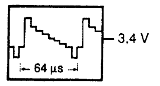
② 1,2 $V_{SS}$



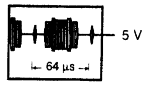
③ 2,2 $V_{SS}$
AV 2 offen/ open/ aperto



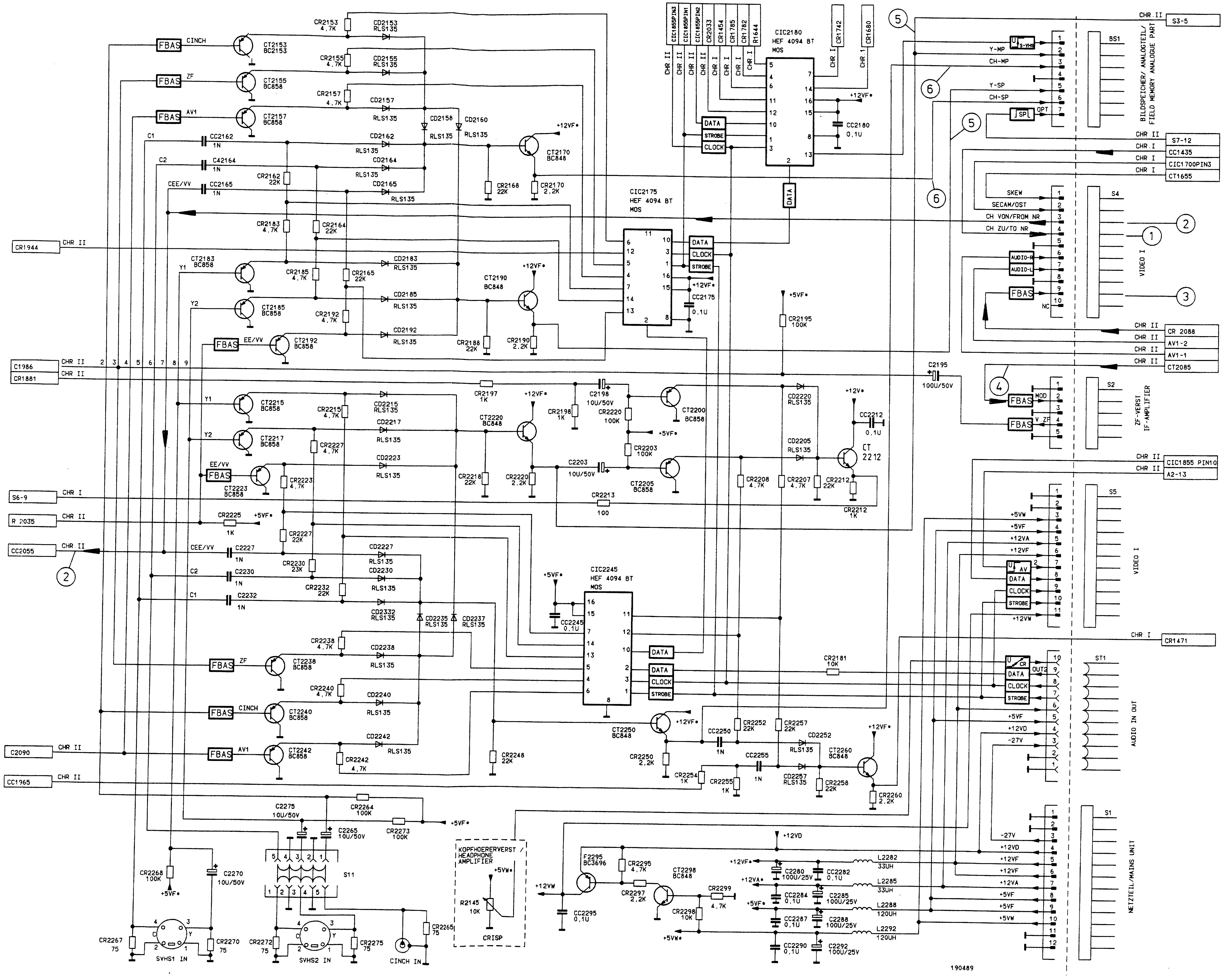
④ 1 $V_{SS}$



⑤ 1 $V_{SS}$



⑥ 1 $V_{SS}$


CIC2180 HEF 4094 BT MOS
CIC2175 HEF 4094 BT MOS
CIC2245 HEF 4094 BT MOS
FBAS
CINCH
ZF
AV1
EE/VV
CT2153 BC2153
CT2155 BC858
CT2157 BC858
CT2170 BC848
CT2183 BC858
CT2185 BC858
CT2190 BC848
CT2192 BC858
CT2215 BC858
CT2217 BC858
CT2220 BC848
CT2200 BC858
CT2205 BC858
CT2223 BC858
CT2238 BC858
CT2240 BC858
CT2242 BC858
CT2250 BC848
CT2260 BC848
CT2298 BC848
F2295 BC3696
DATA
CLOCK
STROBE
CR1944
C1986
CR1881
S6-9
R 2035
CC2055
C2090
CC1965
CHR I
CHR II
S3-5
S7-12
CC1435
CIC1700PIN3
CT1655
CR 2088
AV1-2
AV1-1
CT2085
CIC1855 PIN10
A2-13
CR1471
Y-MP
CH-MP
Y-SP
CH-SP
S-VHS
SPL
OPT
BS1
BILDSPEICHER/ ANALOGTEIL/ FIELD MEMORY ANALOGUE PART
SKEW
SECAM/OST
CH VON/FROM NR
CH ZU/TO NR
AUDIO-R
AUDIO-L
S4
VIDEO I
MOD
V ZF
S2
ZF-VERST IF-AMPLIFIER
S5
+5VM
+5VF
+12VA
+12VF
AV
+12VW
OUT2
CR
ST1
AUDIO IN OUT
+12VD
-27V
S1
NETZTEIL/MAINS UNIT
KOPFHOERERVERST / HEADPHONE AMPLIFIER
R2145 10K
CRISP
S11
SVHS1 IN
SVHS2 IN
CINCH IN
L2282 33UH
L2285 33UH
L2288 120UH
L2292 120UH
RLS135
190489

## Chroma 3
## Croma 3

## (D) Bildspeicher

Im Vergleich zu einem üblichen Videorecorder sind bei diesem Gerät durch den Einsatz eines Halbbildspeichers mehrere neue Funktionen möglich. Die Auswahl dieser Funktionen erfolgt über die Fernbedienung.

- Bild im Bild (**PIP** = Picture in Picture)
  Einblendung einer beliebigen Programmquelle an beliebiger Stelle ins laufende Wiedergabebild.
- Multi Still (**M-S**)
  Von einer Bildquelle, z.B. bei laufender Wiedergabe, werden, in Form einer Bewegungsabfrage, nacheinander 8 "Standbilder" ausgewählt und reihum aktualisiert. Im neunten, mittleren Teilbild erfolgt die normale, bewegte Wiedergabe.
- Multi channel (**M-C**)
  Nacheinander wird je ein Standbild von 9 in der Sendertabelle (Textprogramming) aufeinander folgenden HF-Sendern mit dem Programmnamen dargestellt und reihum aktualisiert.
- Strobe (**STROB**)
  Bei Wiedergabe in Normalgeschwindigkeit und EE-Betrieb wird in regelmäßigen Abständen ein Halbbild gespeichert und gezeigt.
- Ist nur ein Kleinbild (PIP) eingeblendet, kann durch Drücken der Taste ≡⇕ der Bildinhalt des Kleinbildes mit dem des Großbildes vertauscht werden.
- Beim Betätigen der Taste **STOP** wird bei jeder Darstellungsart im PIP-Betrieb der Bildinhalt "eingefroren".
- MEMO / DEMO
  Das gerade gezeigte Bild wird gespeichert. Es kann später wieder abgerufen werden.
- PAINTING
  Dieser Effekt vergröbert die Bildauflösung im Luminanzzweig.
- ZOOM
  Das Großbild wird stufenweise vergrößert. Der zu vergrößernde Teil ist wählbar.
- MOSAIK
  Das Großbild wird, in Stufen frei wählbar, mosaikartig vergröbert.

Durch Betätigen der Taste **CL** werden alle Funktionen, außer **MEMO** zurückgesetzt.

**Funktion:**
Der Bildspeicher besteht aus zwei parallen Signalwegen, dem Bypass-Signalweg und dem Speicher-Signalweg.

**1. Bypass-Signalweg (MAIN CHANNEL)**
Dieser Zweig arbeitet nur bei PIP-Funktionen (Großbild) und bei Transcoderbetrieb (SECAM-PAL).

a.) Chrominanzsignal
Der Chroma-Multinorm-Decoder IC 3840 (IC 4040) schaltet je nach Norm des eintreffenden Signals (PAL / SECAM), das entsprechende Eingangsfilter CT 3813/CT 3825 (CT 4013/CT 4025) zu und decodiert danach dieses Eingangssignal. Die entstehenden Farbdifferenzsignale -U und -V leitet man zur Klemmung (IC 4550) weiter.

b.) Luminanzsignal
Das Y-Signal durchläuft im Bypass-Signalweg, abhängig vom Schaltstatus der Ablaufsteuerung (VHS, S-VHS), das entsprechende Eingangsfilter. Die jeweilige Umschaltung erfolgt durch CT 3968, CT 3975 und CT 3977. Anschließend wird das Signal in der Verstärkerstufe CT 3983/CT 3985/CT 3991 (CT 4190/CT 4192/CT 4199) verstärkt und sowohl der Klemmstufe, IC 4550, IC 4485, als auch einem Amplitudensieb IC 3910 (IC 4130) zugeführt.

## (GB) Field Store

In comparison to a conventional Video Recorder, the Half Field Store fitted to this model makes many new functions possible. The selection of these functions is obtained by the remote control.

- Picture in Picture (**PIP**)
  Blending in a picture from any available programme source into a position of choise into the picture being played back.
- Multi-Still (**M-S**)
  From a picture source, eg when playing back continously, 8 "Freeze Frames" can be selected and displayed in series in the form of a moving sequence. In the ninth picture (in the middle) playback in normal speed is produced.
- Multi Channel (**M-C**)
  Sequential freeze frames from each of the 9 stations in the transmitter table (Text-Programming) in sequence along with the Programme Ident are displayed.
- Strobe (**STROB**)
  When playing back in Normal Speed and EE-Mode, at regular intervals, a half field is stored and displayed.
- If only one small picture (PIP) is blended in, then by depressing the button ≡⇕, the picture content of the small picture is exchanged with that of the large picture.
- When depressing the **STOP** button, in each of the display functions in PIP-Mode, the picture contents is "Frozen".
- MEMO/DEMO
  The picture just displayed is memorised and can be recalled at a later time.
- PAINTING
  This effect coarsens the picture resolution in the luminance path.
- ZOOM
  The main picture is enlarged in stages. The area of enlargement can be selected.
- MOSAIC
  The main picture is made coarse in freely selectable stages and displayed in mosaic mode.

By depressing the **CL** button all functions are reset with the exception of **MEMO**.

**Function:**
The Field Store Memory consists of two parallel signal paths, the Bypass signal path and the Memory-signal path.

**1. Bypass-Signal Path (MAIN CHANNEL)**
This path operates only on PIP functions (large picture) and on Transcoder mode (SECAM - PAL).

a.) Chrominance Signal
The Chroma Multi-Standard Decoder IC 3840 (IC 4040) switches, according to the Standard of the incomming signals (PAL/SECAM), the signal through the appropriate input filter CT 3813/CT 3825 (CT 4013/CT 4025) and the input is decoded. The resulting Colour Difference Signals -U and -V are ready for clamping (IC 4550).

b.) Luminance Signal
The Y-Signal in the Bypass Signal Path, depending upon the switching status from the Sequence Control (VHS, S-VHS), passes through the appropriate input filter. The required switching is carried out by CT 3968, CT 3975, CT 3977. Subsequently, the signal is amplified in an amplifying stage (CT 3983/CT 3985/CT 3991 (CT 4190/CT 4192/CT 4199), fed to a clamping stage, IC 4550, IC 4485 and also fed to a sync separator IC 3910 (IC 4130). From the input signal, the different "synchronising

## (I) Memoria d'immagine

Rispetto ad un normale videoregistratore, questo apparecchio consente l'utilizzo di molte nuove funzioni grazie alla disponibilità di una memoria di semiquadro. La scelta di queste funzioni avviene mediante il telecomando.

- Immagine nell'immagine
  (**PIP**=Picture in Picture)
  Visualizzazione di una fonte di programma in un punto qualsiasi dell'immagine che si sta riproducendo.
- Multi Still (**M-S**)
  Da una fonte d'immagine, per es. durante la riproduzione, vengono scelti successivamente otto "fermi immagine" ed aggiornati in senso rotatorio. Nella nona immagine al centro avviene la normale riproduzione.
- Multi channel (**M-C**)
  Uno dopo l'altro viene rappresentato un fermo immagine per ciascuna di nove emittenti consecutive contenute nella tabella omonima (Textprogramming) con la sigla del programma ed aggiornato circolarmente.
- Strobe (**STROB**)
  Durante la riproduzione del nastro a velocità normale e nel funzionamento EE, un semiquadro viene memorizzato e riprodotto ad intervalli regolari.
- Se è visualizzata solo un'immagine piccola (PIP), premendo il tasto ≡⇕ è possibile invertire il contenuto di questa immagine con quello della grande.
- Azionando il tasto **STOP**, per qualsiasi tipo di riproduzione PIP viene "congelato" il contenuto dell'immagine.
- MEMO/DEMO
  L'immagine riprodotta in quel momento viene memorizzata e può essere richiamata più avanti.
- Painting
  Questo effetto influisce sulla risoluzione dell'immagine nell'ambito della luminanza.
- ZOOM
  L'immagine grande viene gradualmente ingrandita. Si può scegliere la parte da ingrandire.
- MOSAIK
  L'immagine grande viene suddivisa in zone che possono essere scelte evidenziate a forma di mosaico.

Con il tasto **CL** vengono ripristinate tutte le funzioni precedenti tranne che in situazione **MEMO**.

**Prospetto delle funzioni:**
La memoria d'immagine è composta da due percorsi paralleli del segnale: uno per il segnale bypass e l'altro per il segnale memoria.

**1. Percorso del segnale bypass (MAIN CHANNEL)**
Questa sezione lavora esclusivamente per le funzioni PIP (immagine grande) e quando il transcoder (SECAM-PAL) è inserito.

a.) Segnale di crominanza
Il decoder croma multinorma IC 3840 (IC 4040) commuta il filtro d'ingresso CT 3813/CT 3825 (CT 4013/ CT 4025) a seconda della norma del segnale ricevuto (PAL/SECAM) e successivamente decodifica tale segnale. I segnali di differenza colore -U e -V ottenuti vengono inoltrati ad IC 4550 per la funzione clamp.

b.) Segnale di luminanza
Il segnale Y attraversa nel circuito bypass il filtro d'ingresso dipendentemente dallo stato di commutazione del comando funzioni (VHS, S-VHS). La rispettiva commutazione avviene mediante CT 3968, CT 3975 e CT 3977. In ultimo il segnale viene

Dieses bildet aus dem Eingangssignal die verschiedenen "Synchronisierimpulse":

- COMPOSIT SYNC (C-SYNC) an Pin 1 des IC 3910
  Das C-SYNC-Signal wird invertiert (CT 3953) und dem Ausgangswahlschalter MUX (IC 4555) zugeführt.
- Sandcastle (SC) an Pin 14 des IC 3910 (IC 4130)
  Der SC-Impuls wird zum Einen in der Stufe CT 3918, CT 3920 (CT 4138, CT 4140) verstärkt, über die Diode CD 3935 (CD 4155) mit dem V-Impuls verknüpft (Super-Sandcastle- SSC) und dem Chromadecoder IC 3840 (IC 4040) über Pin 24 zugeführt. Zum Anderen bildet man aus dem an IC 3910-(14) anstehenden SC-Signal über die Dioden CD 3953, CD 3955 den H-SYNC, der als Steuersignal der Klemmstufe IC 4485-(6) zugeführt wird. Außerdem erhält der Controller CIC 4310 diesen Impuls über CT 3950 in invertierter Form.
- V-SYNC an Pin 18 des IC 3910 (IC 4130).
  Der Monoflop CT3925, CT3932 (CT 4145, CT 4152) verlängert die abfallende Flanke des V-SYNC-Impulses zum Zwecke der Halbbild-Erkennung und führt es einerseits der "Additionsstufe" CD 3935 (CD 4155) und andererseits über CT 3940 (CT 4160) als invertiertes Signal dem Controller CIC 4310 zu.

### 2. Speicher-Signalweg (SUB CHANNEL)

Dieser Signalweg arbeitet bei allen Features, die den Bildspeicher benutzen.

a.) Die Signalverarbeitung des Speicherwegs ist nahezu identisch mit dem des Bypass-Wegs (MAIN CHANNEL). Es entfallen lediglich das Composit-Sync-Signal (C-SYNC) und der H-SYNC-Klemmimpuls. Die Positiosnummern für diesen Signalweg sind in der Beschreibung des Bypass-Weges in Klammern () angegeben.

b.) Das Digitalteil des Bildspeicherwegs stellt den eigentlichen Bildspeicher dar. Er besteht im Einzelnen aus

- der Klemmung (IC 4255) mit den Eingangsfiltern,
- den A/D-Wandlern IC 4210, IC 4230, IC 4250,
- dem Controller CIC 4310 mit den zugehörigen Speicherbausteinen IC 4320, IC 4330,
- der PLL-Schaltung (CIC 4355, IC 4360, CIC 4395),
- den D/A-Wandlern (IC 4420, IC 4445, IC 4470)
- der Ausgangsklemmstufe (IC 4485). Diese ist im Analogteil des Bildspeicherschaltplanes dargestellt.

### 3. Ausgangsschalter und Matrix

Über den I$^2$C-Bus und den Controller CIC 4310 wird je nach gewählter Funktion, zwischen BYPASS-Weg und Speicherweg umgeschaltet (MUX, IC 4490, IC 4555). Anschließend erfolgt in einer Schaltstufe die Konvertierung von Y-, U-, und V-Signal in R-, G-, B-Signale. Diese führt man über die Steckverbindung BS 2 der Chassisplatte II zu.

pulses" are constructed as follows:

- Composite Sync (C-SYNC) to Pin 1 of the IC 3910
  The C-SYNC signal is inverted (CT 3953) and fed to the output selection switch MUX (IC 4555).
- Sandcastle (SC) to Pin 14 of IC 3910 (IC 4130)
  In one path, SC Pulse is amplified in the stage made up by CT 3918, CT 3920 (CT 4138, CT 4140), combined by the diode CD 3935 (CD 4155) with the V-Pulse (Super-Sandcastle-SSC) and fed to the chroma decoder IC 3840 (IC 4040) via Pin 24. In another path, the SC-Signal present on IC 3910-(14) and the H-SYNC from the diodes CD 3953, CD 3955 are combined so that the control signal is generated for the clamping stage IC 4485-(6). In addition the Controller CIC 4310 receives this pulse via CT 3950 in inverted form.
- V-SYNC to Pin 18 of IC 3910 (IC 4130)
  The monostable circuit CT 3925, CT 3932 (CT 4145, CT 4152) prolongs the trailing flank of the V-SYNC-Pulse so that the half field can be identified and feeds this in one path to the "Adding Stage" CD 3935 (CD 4155) and in another path via CT 3940 (CT 4160) as the inverted signal to the Controller CIC 4310.

### 2. Store (Memory) Signal Path (SUB CHANNEL)

This signal path operates in all Features on which the Field Store is used:

a.) The signal processing in the Store (memory) path is almost identical to the Bypass-path (Main Channel). However, the Composite Sync Signal (C-SYNC) and the H-Sync-Clamping Pulse is omitted. The position numbers of components used in this signal path is given in ( ) in the describtion of the Bypass-path.

b.) In the Field Store path the Digital Stage is in effect the Field Store. It consists of the following individual stages:

- the clamping (IC 4255) with the input filters,
- the A/D Converters IC 4210, IC 4230, IC 4250,
- the Controller CIC 4310 with the required Memory Components IC 4320, IC 4330,
- the PLL-Circuit (CIC 4355, IC 4360, CIC 4395)
- the D/A Converters (IC 4420, IC 4445, IC 4470)
- the output clamping stage (IC 4485). This is shown in the analogue stage of the Field Store Circuit Diagrams.

### 3. Output Switch and Matrix

From the I$^2$C Bus and the Controller CIC 4310, according to each of the selected functions, the path is switched between the Bypass-path and the Memory-path (MUX, IC 4490, IC 4555). Afterwards, conversion is carried out to alter the Y-, U- and V-Signals into the R-, G- and B-Signals. These are then fed via the plug connection BS 2 to the Chassis Panel II.

amplificato nello stadio amplificatore CT 3983/CT3985/CT3991 (CT4190/CT4192/CT4199) e fornito sia allo stadio clamp, IC 4550, IC 4485, che ad un circuito separatore IC 3910 (IC 4130). Questo ricava dal segnale d'ingresso i vari "impulsi di sincronismo":

- COMPOSIT SYNC (C-SYNC) al pin 1 di IC 3910
  Il segnale C-SYNC viene invertito (CT 3953) e dato al selettore d'uscita MUX (IC 4555).
- Sandcastle (SC) al pin 14 di IC 3910 (IC 4130)
  L'impulso SC viene da una parte amplificato nello stadio CT 3918, CT 3920 (CT 4138, CT 4140), guindi tramite il diodo CD 3935 (CD 4155) associato all'impulso V (Super-Sandcastle-SSC) ed inviato al decoder croma IC 3840 (IC 4040) attraverso il pin 24. Dall'altra, dal segnale SC applicato ad IC 3910-(14) tramite i diodi CD 3953, CD 3955 viene ricavato l'impulso H-SYNC che giunge poi allo stadio clamp IC 4485-(6) come segnale di controllo. Inoltre il controller CIC 4310 riceve questo impulso da CT 3950 in forma invertita.
- V-SYNC al pin 18 di IC 3910 (IC 4130).
  Il monoflop CT 3925, CT 3932 (CT 4145, CT 4152) prolunga il fianco in discesa dell'impulso V-SYNC per l'identificaz. di semiquadro e lo conduce da un lato allo "stadio sommatore" CD 3935 (CD 4155) e dall'altro mediante CT 3940 (CT 4160) al controller CIC 4310 come segnale invertito.

### 2. Percorso del segnale memoria (SUB CHANNEL)

Questa sezione è operante quando sono attivate le fuzioni speciali (features) che utilizzano la memoria d'immagine.

a.) L'elaborazione del segnale memoria è pressochè identica a quella del segnale bypass (MAIN CHANNEL). Mancano il segnale composito di sincronismo (C-SYNC) e l'impulso clamp H-SYNC. I numeri di posizione per questa sezione sono riportati fra parentesi nella discrizione bypass.

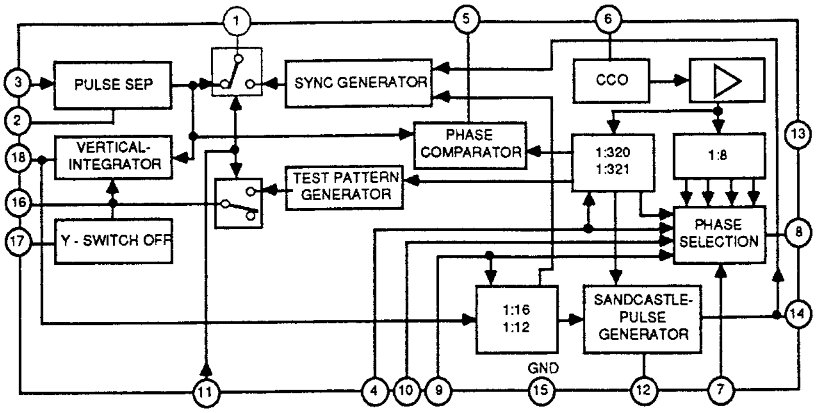
b.) La sezione digitale del circuito memoria rappresenta la memoria d'immagine vera e propria. Essa comprende i seguenti stadi:

- circuito clamp (IC 4255) con i filtri d'ingresso,
- convertitori A/D IC 4210, IC 4230, IC 4250,
- controller CIC 4310 coi relativi integrati di memoria IC 4320, IC 4330,
- circuito PLL (CIC 4355, IC 4360, CIC 4395),
- convertitori D/A (IC 4420, IC 4445, IC 4470)
- stadio clamp di uscita (IC 4485). Questo è illustrato nella sezione analogica dello schema della memoria d'immagine.

### 3. Commutatore d'uscita e matrice

Mediante l'I$^2$C bus e lo stadio controller CIC 4310 viene commutato, a seconda della funzione scelta, tra sezione BYPASS e memoria (MUX, IC 4490, IC 4555). In conclusione avviene in uno stadio di commutazione la conversione di Y, U e V nei segnali R, G, B. Questi vengono trasferiti alla piastra telaio II mediante conduttore BS 2.

### TDA 3755
### IC 3910, IC 4130


PULSE SEP
SYNC GENERATOR
CCO
VERTICAL-INTEGRATOR
PHASE COMPARATOR
1:320
1:321
1:8
TEST PATTERN GENERATOR
Y - SWITCH OFF
PHASE SELECTION
1:16
1:12
SANDCASTLE-PULSE GENERATOR
GND
1
5
6
3
2
18
16
17
13
8
14
11
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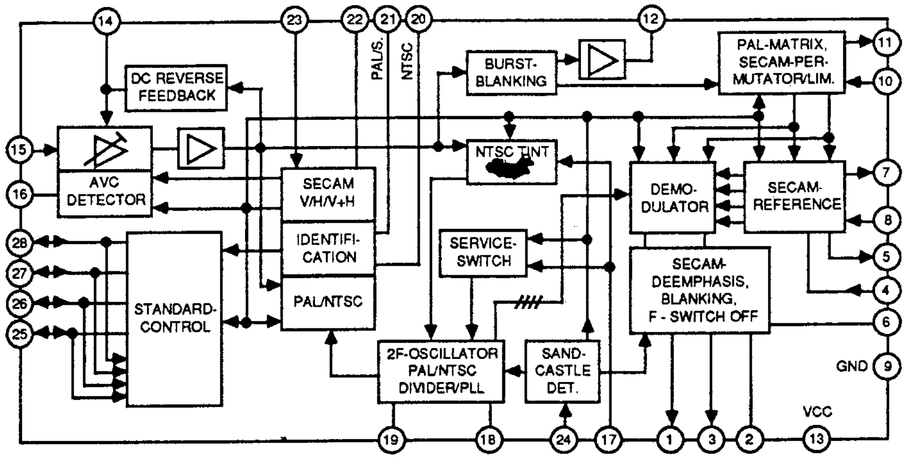
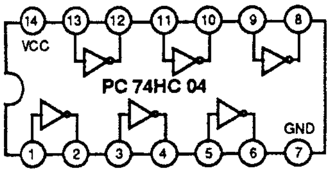
10
9
15
12
7

### TDA 4557
### IC 3840, IC 4040


14
23
22
21
20
12
PAL/S.
NTSC
DC REVERSE FEEDBACK
BURST-BLANKING
PAL-MATRIX, SECAM-PER-MUTATOR/LIM.
11
10
15
16
AVC DETECTOR
NTSC TINT
SECAM V/H/V+H
DEMO-DULATOR
SECAM-REFERENCE
7
8
28
27
26
25
IDENTIFI-CATION
SERVICE-SWITCH
STANDARD-CONTROL
PAL/NTSC
SECAM-DEEMPHASIS, BLANKING, F - SWITCH OFF
5
4
6
2F-OSCILLATOR PAL/NTSC DIVIDER/PLL
SAND-CASTLE DET.
GND
9
VCC
19
18
24
17
1
3
2
13

### PC 74 HC 04
### CIC 4254


14
13
12
11
10
9
8
VCC
PC 74HC 04
GND
1
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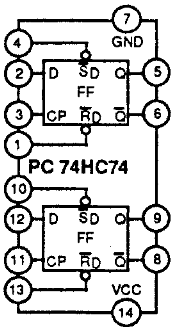
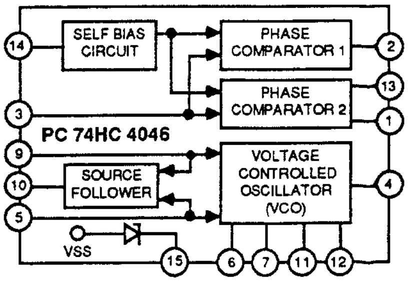
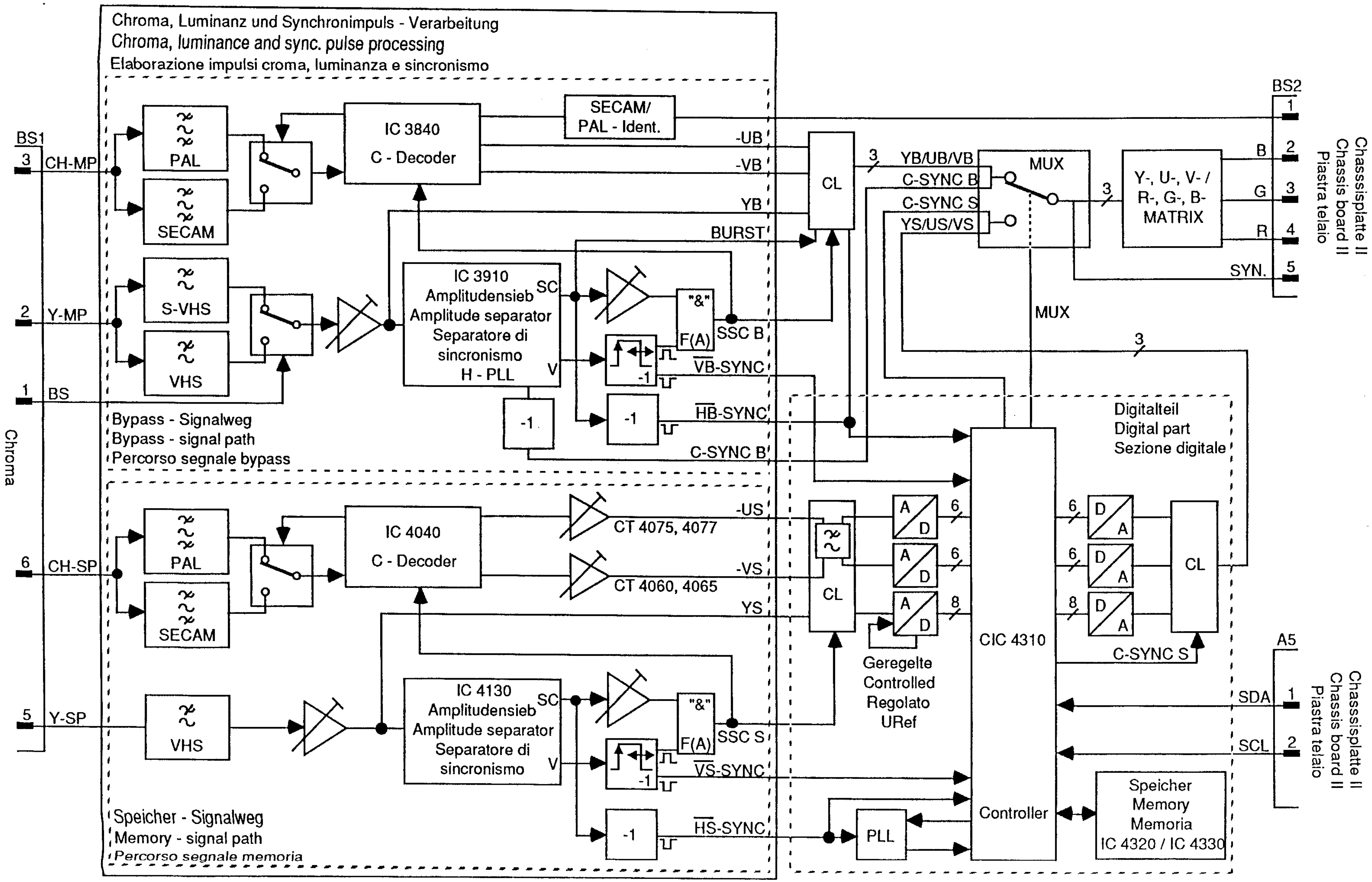
7

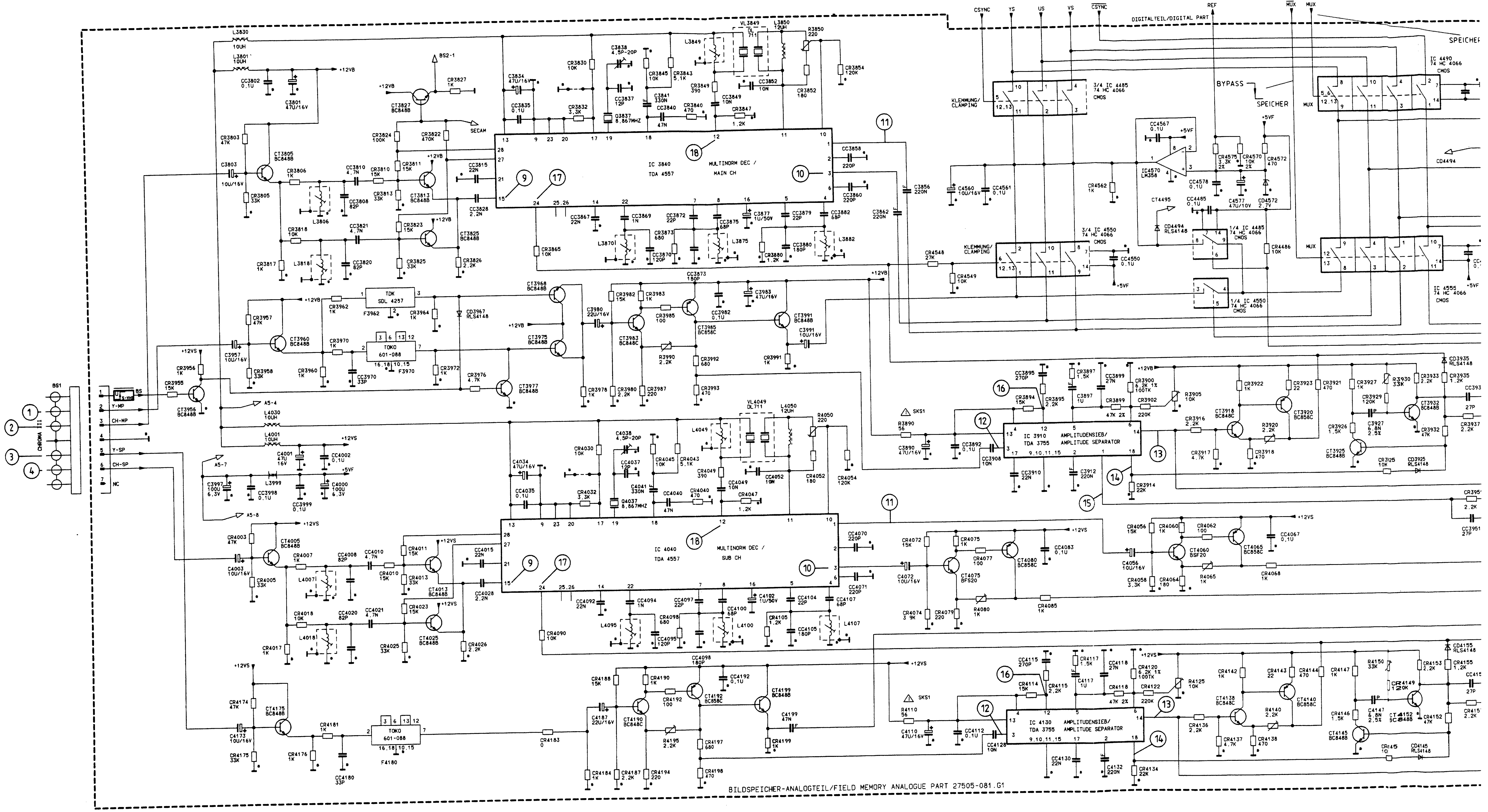
### PC 74 HC 74
### CIC 4395


7
GND
4
2
3
1
D
SD
Q
FF
CP
RD
Q̄
5
6
PC 74HC74
10
12
11
13
9
8
VCC
14

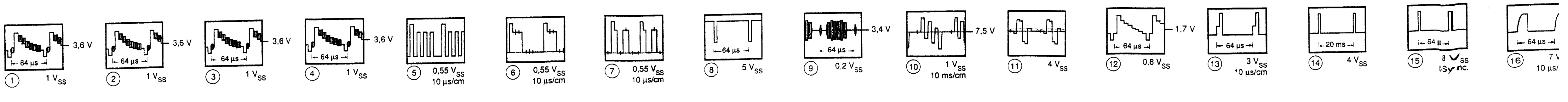
### PC 74 HC 4046
### CIC 4355


SELF BIAS CIRCUIT
PHASE COMPARATOR 1
PHASE COMPARATOR 2
PC 74HC 4046
VOLTAGE CONTROLLED OSCILLATOR (VCO)
SOURCE FOLLOWER
VSS
14
3
9
10
5
2
13
1
4
15
6
7
11
12


Chroma, Luminanz und Synchronimpuls - Verarbeitung
Chroma, luminance and sync. pulse processing
Elaborazione impulsi croma, luminanza e sincronismo
BS1
3 CH-MP
2 Y-MP
1 BS
6 CH-SP
5 Y-SP
Chroma
PAL
SECAM
S-VHS
VHS
IC 3840
C - Decoder
SECAM/
PAL - Ident.
-UB
-VB
YB
BURST
IC 3910
Amplitudensieb
Amplitude separator
Separatore di
sincronismo
H - PLL
SC
V
"&"
F(A)
SSC B
VB-SYNC
HB-SYNC
C-SYNC B
-1
Bypass - Signalweg
Bypass - signal path
Percorso segnale bypass
IC 4040
C - Decoder
CT 4075, 4077
CT 4060, 4065
-US
-VS
YS
IC 4130
Amplitudensieb
Amplitude separator
Separatore di
sincronismo
SSC S
VS-SYNC
HS-SYNC
Speicher - Signalweg
Memory - signal path
Percorso segnale memoria
CL
3
YB/UB/VB
C-SYNC B
C-SYNC S
YS/US/VS
MUX
Y-, U-, V- /
R-, G-, B-
MATRIX
BS2
B 2
G 3
R 4
SYN. 5
Chassisplatte II
Chassis board II
Piastra telaio
Digitalteil
Digital part
Sezione digitale
A D
D A
6
8
CIC 4310
Controller
Geregelte
Controlled
Regolato
URef
C-SYNC S
PLL
Speicher
Memory
Memoria
IC 4320 / IC 4330
A5
SDA 1
SCL 2

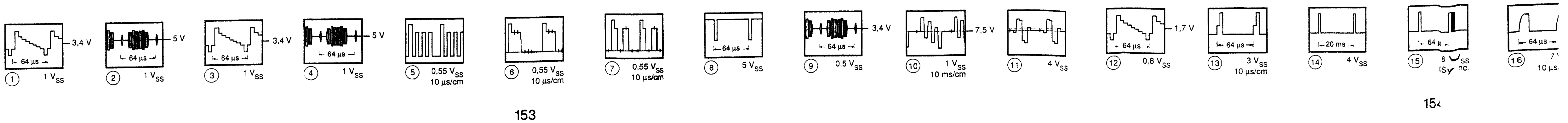

CHROMA III
BS1
BS
Y-MP
CH-MP
Y-SP
CH-SP
NC
IC 3840
TDA 4557
MULTINORM DEC / MAIN CH
IC 4040
TDA 4557
MULTINORM DEC / SUB CH
TDK SDL 4257
TOKO 601-088
IC 3910 TDA 3755 AMPLITUDENSIEB/ AMPLITUDE SEPARATOR
IC 4130 TDA 3755 AMPLITUDENSIEB/ AMPLITUDE SEPARATOR
IC 4570 LM358
3/4 IC 4485 74 HC 4066 CMOS
3/4 IC 4550 74 HC 4066 CMOS
1/4 IC 4485 74 HC 4066 CMOS
1/4 IC 4550 74 HC 4066 CMOS
IC 4490 74 HC 4066 CMOS
IC 4555 74 HC 4066 CMOS
KLEMMUNG/ CLAMPING
BYPASS
SPEICHER
MUX
CSYNC
YS
US
VS
REF
DIGITALTEIL/DIGITAL PART
SECAM
+12VB
+12VS
+5VF
SKS1
BILDSPEICHER-ANALOGTEIL/FIELD MEMORY ANALOGUE PART 27505-081.G1

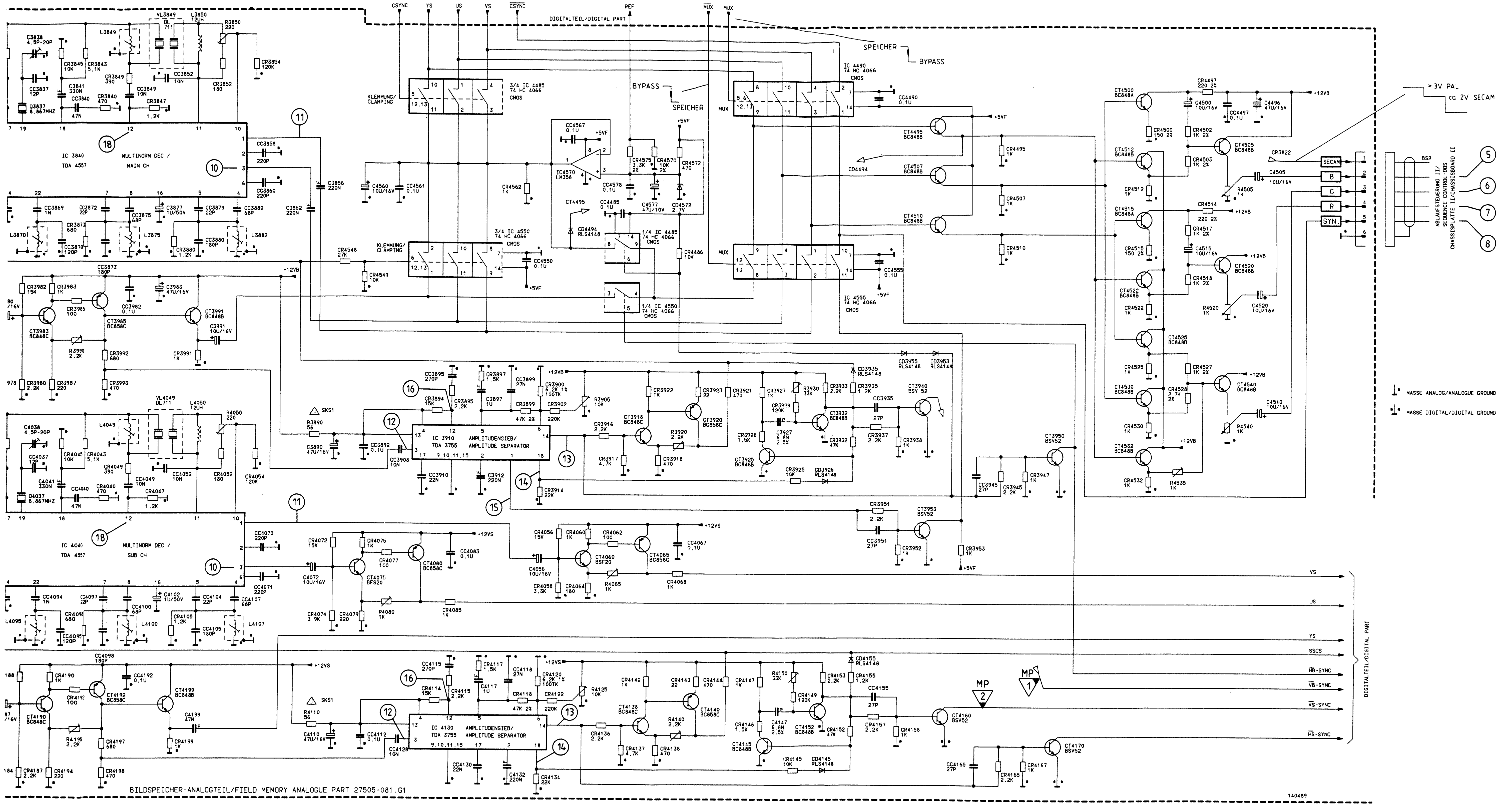
Aufnahme (VHS)
Record (VHS)
Registrazione (VHS)



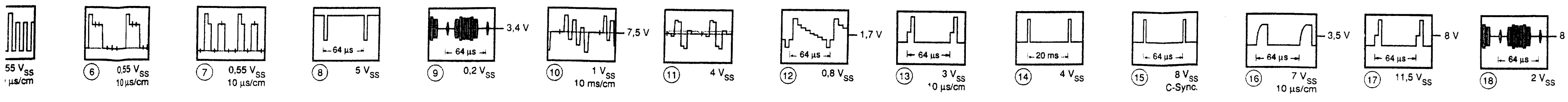
Aufnahme (S-VHS über S-VHS-Buchse)
Record (S-VHS via S-VHS socket)
Registrazione (S-VHS sopra presa S-VHS)

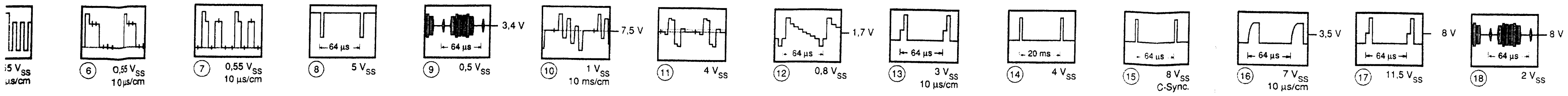
Wiedergabe
Playback
Riproduzione



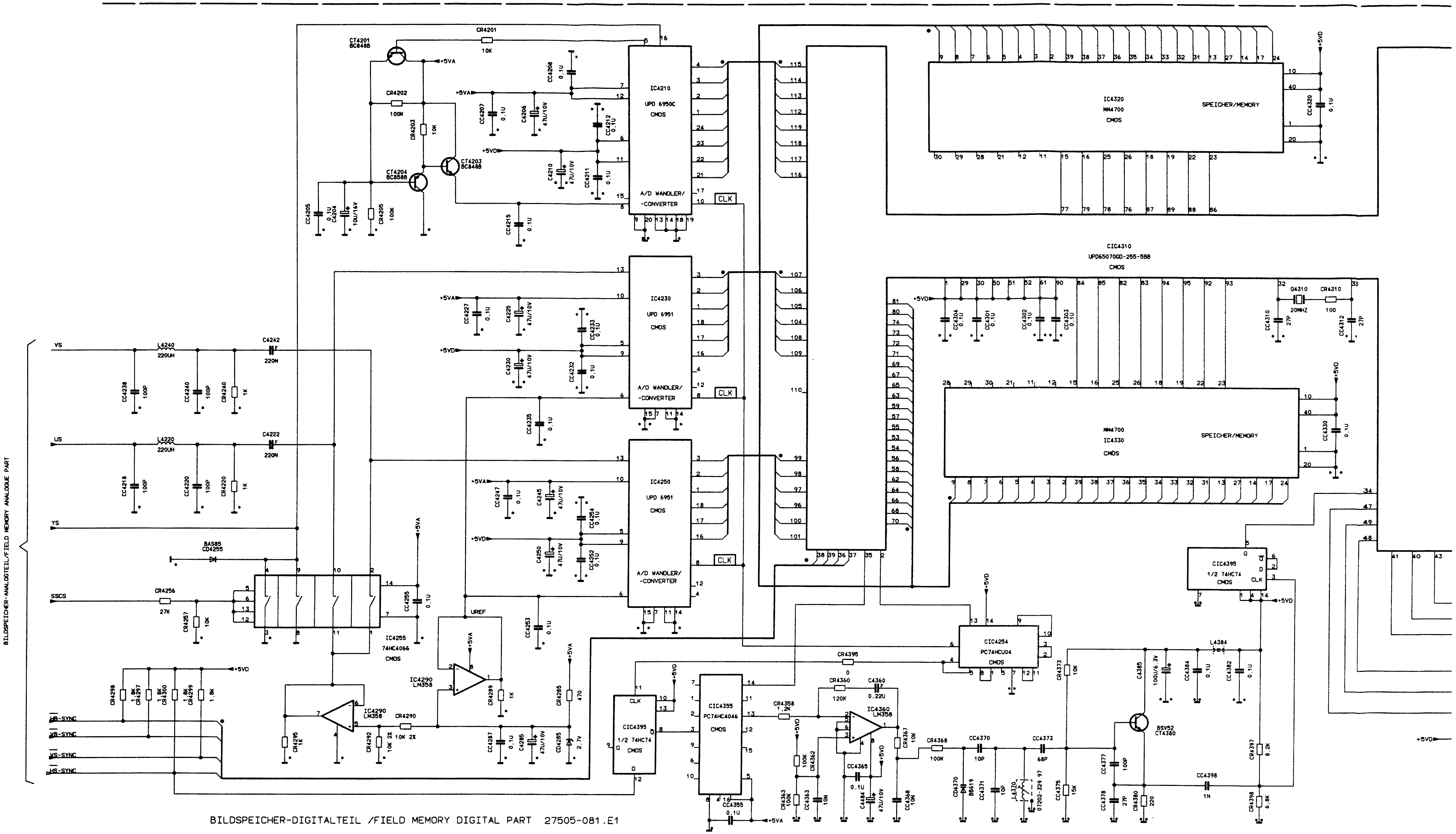


DIGITALTEIL/DIGITAL PART
CSYNC
YS
US
VS
REF
MUX
SPEICHER
BYPASS
IC 4490 74 HC 4066 CMOS
3/4 IC 4485 74 HC 4066 CMOS
KLEMMUNG/ CLAMPING
IC4570 LM358
3/4 IC 4550 74 HC 4066 CMOS
1/4 IC 4485 74 HC 4066 CMOS
1/4 IC 4550 74 HC 4066 CMOS
IC 4555 74 HC 4066 CMOS
IC 3840 TDA 4557 MULTINORM DEC / MAIN CH
IC 4040 TDA 4557 MULTINORM DEC / SUB CH
IC 3910 TDA 3755 AMPLITUDENSIEB/ AMPLITUDE SEPARATOR
IC 4130 TDA 3755 AMPLITUDENSIEB/ AMPLITUDE SEPARATOR
VL3849 DL 711
VL4049 DL711
Q3837 8.867MHZ
Q4037 8.867MHZ
> 3V PAL
ca 2V SECAM
SECAM
B
G
R
SYN.
BS2
ABLAUFSTEUERUNG II/ SEQUENCE CONTROL-DOS CHASSISPLATTE II/CHASSISBOARD II
MASSE ANALOG/ANALOGUE GROUND
MASSE DIGITAL/DIGITAL GROUND
SKS1
+12VB
+12VS
+5VF
VS
US
YS
SSCS
HB-SYNC
VB-SYNC
VS-SYNC
HS-SYNC
MP 1
MP 2
DIGITALTEIL/DIGITAL PART
BILDSPEICHER-ANALOGTEIL/FIELD MEMORY ANALOGUE PART 27505-081.G1
140489



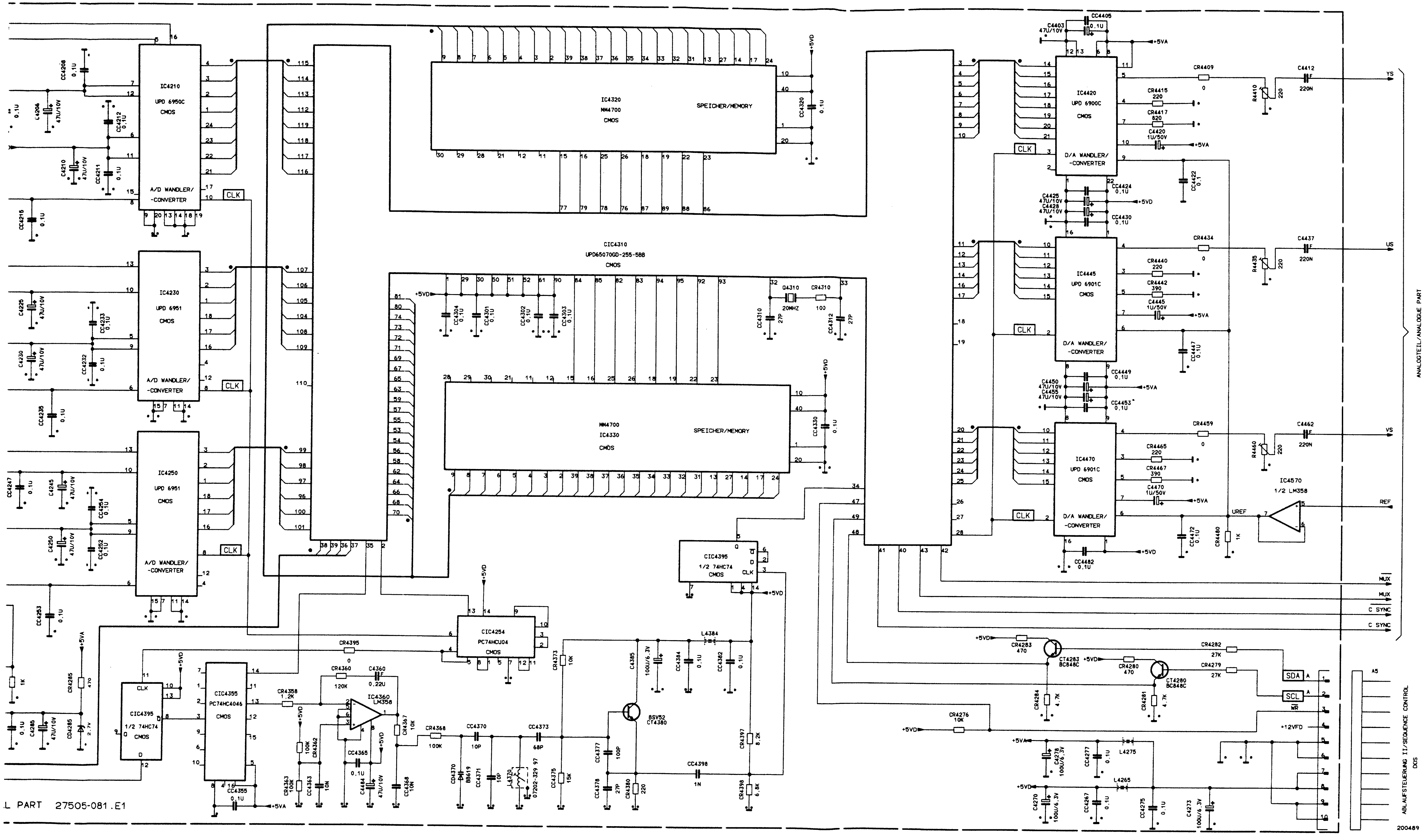


**Bildspeicher (Analog-Teil)**
**Field memory (Analogue part)**
**Memoria d´immagine (sezione analogica)**


BILDSPEICHER-ANALOGTEIL/FIELD MEMORY ANALOGUE PART
VS
US
YS
SSCS
HB-SYNC
VB-SYNC
VS-SYNC
HS-SYNC
CT4201 BC848B
CT4203 BC848B
CT4204 BC858B
CR4201 10K
CR4202 100K
CR4203 10K
CR4205 100K
IC4210 UPD 6950C CMOS A/D WANDLER/-CONVERTER
IC4230 UPD 6951 CMOS A/D WANDLER/-CONVERTER
IC4250 UPD 6951 CMOS A/D WANDLER/-CONVERTER
CLK
L4240 220UH
L4220 220UH
C4242 220N
C4222 220N
BAS85 CD4255
CR4256 27K
CR4257 10K
IC4255 74HC4066 CMOS
IC4290 LM358
UREF
CR4290 10K 2%
CR4292 10K 2%
CR4289 1K
CR4265 470
CD4285 2.7V
CIC4395 1/2 74HC74 CMOS
CIC4355 PC74HC4046 CMOS
CR4358 1.2K
CR4360 120K
C4360 0.22U
IC4360 LM358
CR4395
CR4368 100K
CC4370 10P
CC4373 68P
CD4370 BB619
L4370 07202-329 97
CR4373 10K
CR4375 15K
CC4377 100P
CC4378 27P
CR4380 220
BSV52 CT4380
C4385 1000U/6.3V
L4384
CC4398 1N
CR4397 8.2K
CR4398 6.8K
CIC4254 PC74HCU04 CMOS
CIC4310 UPD65070GD-255-5BB CMOS
Q4310 20MHZ
CR4310 100
CC4310 27P
CC4312 27P
IC4320 NM4700 CMOS SPEICHER/MEMORY
NM4700 IC4330 CMOS SPEICHER/MEMORY
+5VA
+5VD

BILDSPEICHER-DIGITALTEIL /FIELD MEMORY DIGITAL PART 27505-081.E1

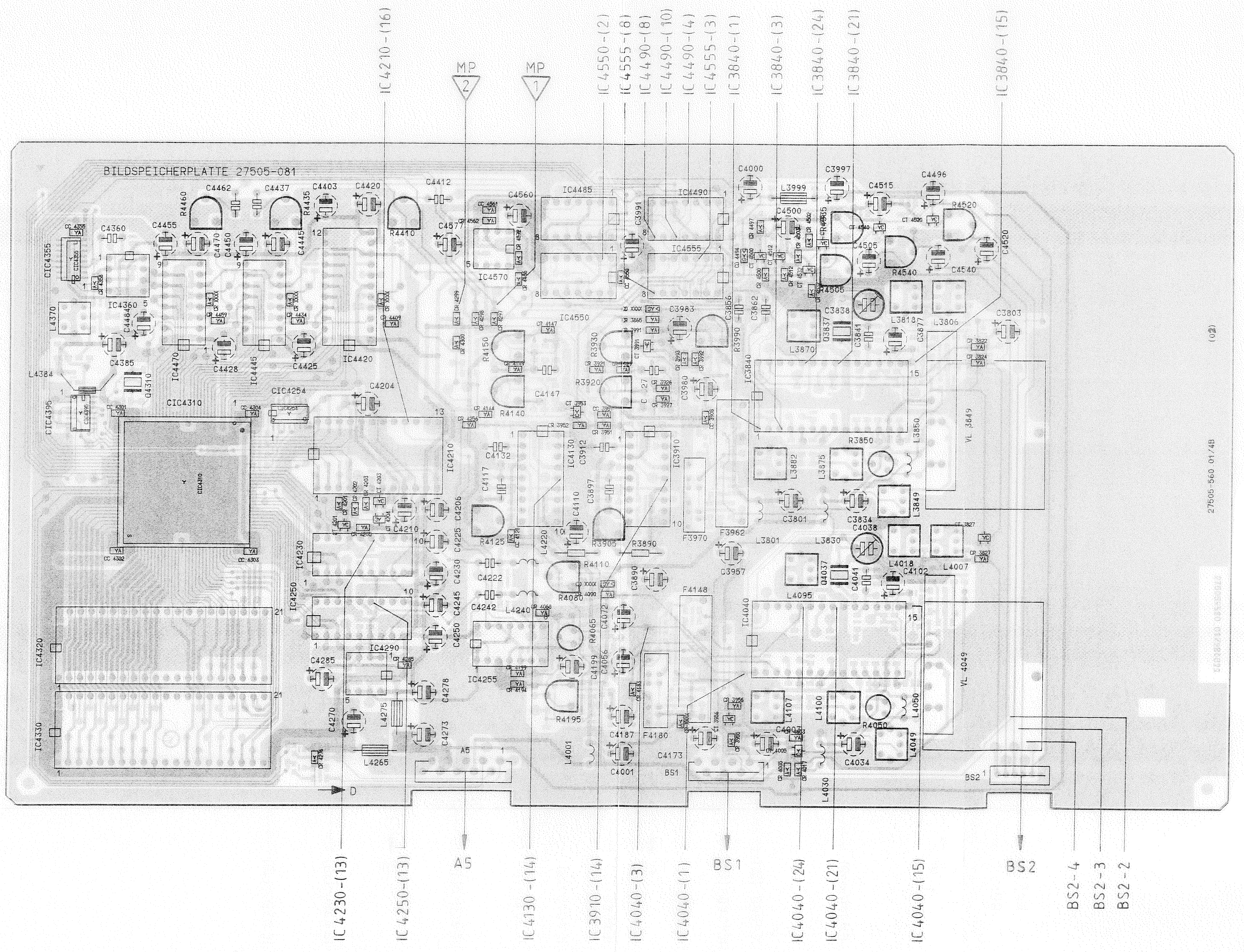
**Bildspei**
**Field me**
**Memoria**


IC4210
UPD 6950C
CMOS
A/D WANDLER/ -CONVERTER
IC4230
UPD 6951
CMOS
A/D WANDLER/ -CONVERTER
IC4250
UPD 6951
CMOS
A/D WANDLER/ -CONVERTER
CLK
IC4320
MM4700
CMOS
SPEICHER/MEMORY
CIC4310
UPD65070GD-255-588
CMOS
MM4700
IC4330
CMOS
SPEICHER/MEMORY
Q4310
20MHZ
CR4310
100
IC4420
UPD 6900C
CMOS
D/A WANDLER/ -CONVERTER
IC4445
UPD 6901C
CMOS
D/A WANDLER/ -CONVERTER
IC4470
UPD 6901C
CMOS
D/A WANDLER/ -CONVERTER
IC4570
1/2 LM358
UREF
REF
YS
US
VS
MUX
C SYNC
SDA
SCL
WR
+12VFD
ANALOGTEIL/ANALOGUE PART
ABLAUFSTEUERUNG II/SEQUENCE CONTROL
DOS
A5
CIC4395
1/2 74HC74
CMOS
CIC4254
PC74HCU04
CMOS
CIC4355
PC74HC4046
CMOS
IC4360
LM358
BSV52
CT4380
CT4283
BC848C
CT4280
BC848C
L4384
L4275
L4265
L4370
07202-329 97
D4370
BB619
CD4285
2.7V
+5VD
+5VA
L PART 27505-081.E1
200489

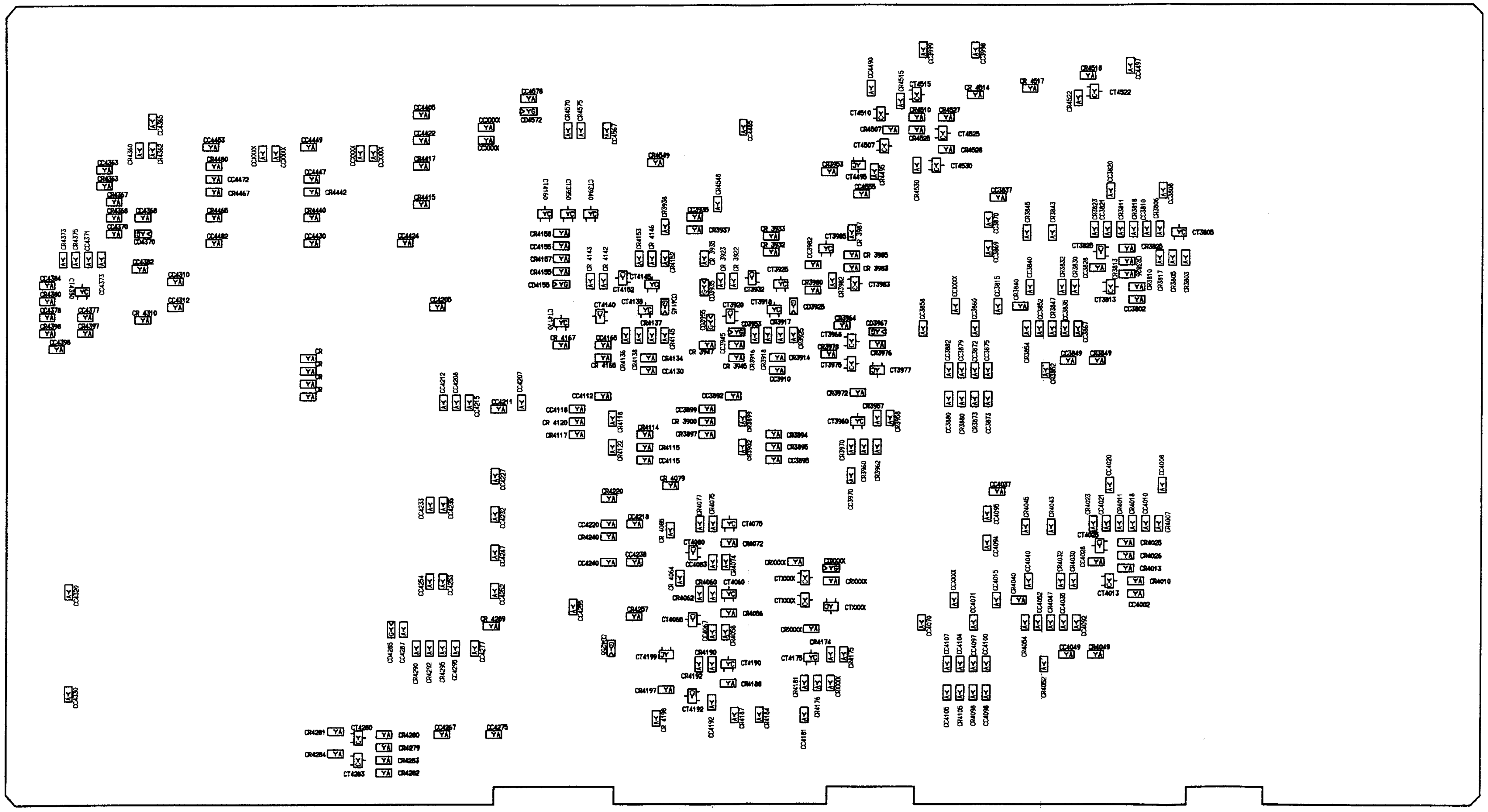
## Bildspeicher (Digital-Teil)
## Field memory (Digital part)
## Memoria d´immagine (sezione digitale)

## Bildspeicher / Field memory / Memoria d´immagine

A 5 - Chassisplatte II / Chassis Board II / Piastra telaio II
BS 1 - Chroma / Croma
BS 2 - Chassisplatte II / Chassis Board II / Piastra telaio II


IC4210-(16)
MP 2
MP 1
IC4550-(2)
IC4555-(8)
IC4490-(8)
IC4490-(10)
IC4490-(4)
IC4555-(3)
IC3840-(1)
IC3840-(3)
IC3840-(24)
IC3840-(21)
IC3840-(15)
BILDSPEICHERPLATTE 27505-081
27505-560 01/4B
D
A5
BS1
BS2
IC4230-(13)
IC4250-(13)
IC4130-(14)
IC3910-(14)
IC4040-(3)
IC4040-(1)
IC4040-(24)
IC4040-(21)
IC4040-(15)
BS2-4
BS2-3
BS2-2

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



## D Abgleich

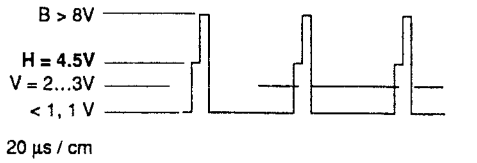
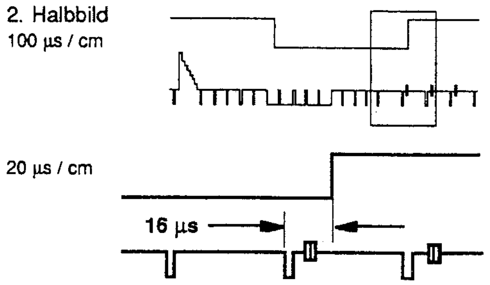
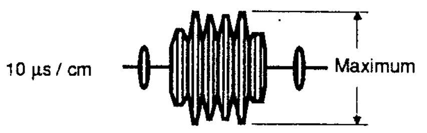
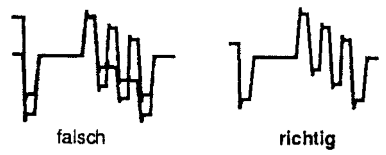
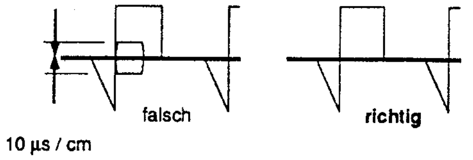
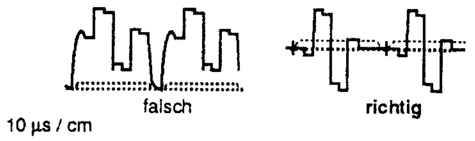
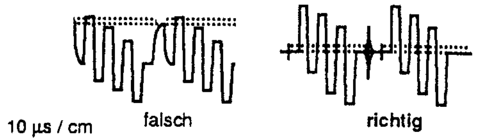
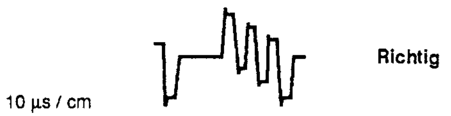
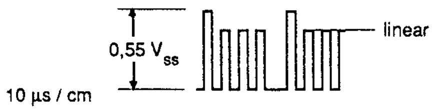
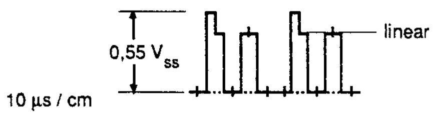
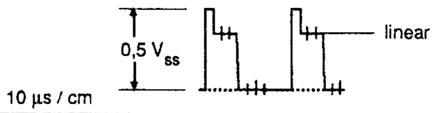
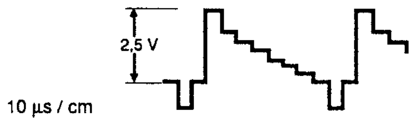
**Meßgeräte :**
Oszilloskop, Tastkopf 10:1, Videogenerator, Frequenzzähler
**Servicearbeiten nach Bausteinwechsel: –**

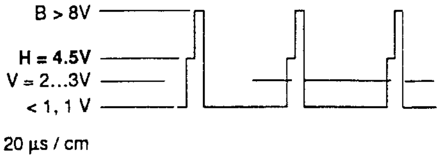
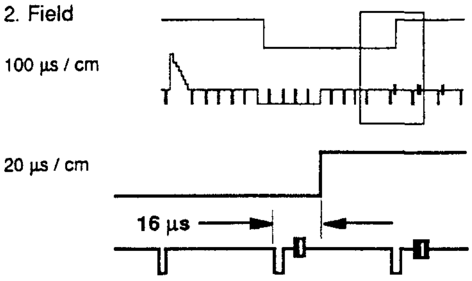
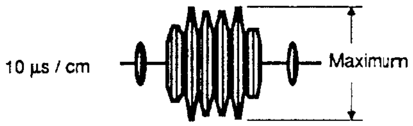
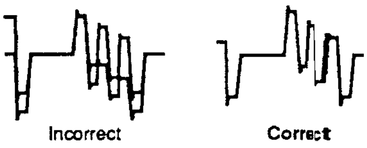
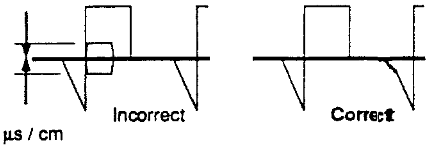
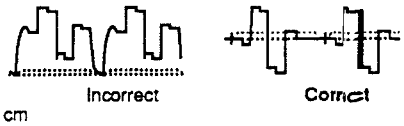
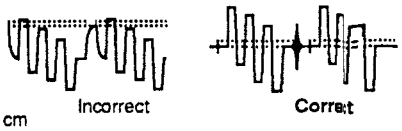
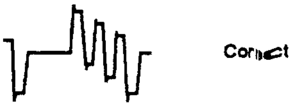
## GB Adjustment

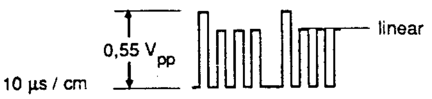
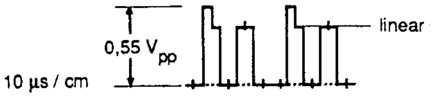
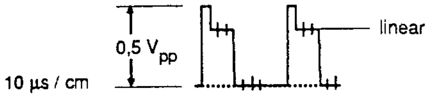
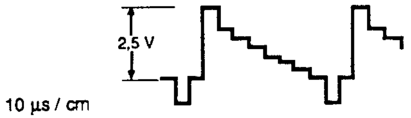
**Test equipment:**
Oscilloscope, 10:1 probe, video generator, Frequency counter
**Servicing work after changing board: –**

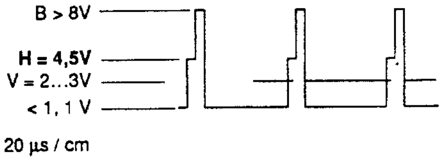
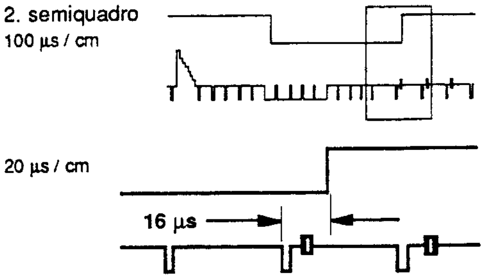
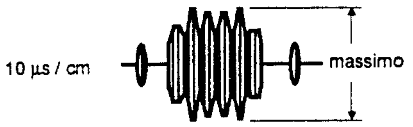
## I Taratura

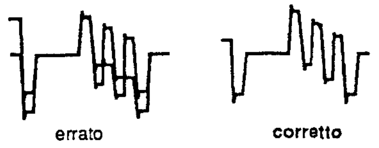
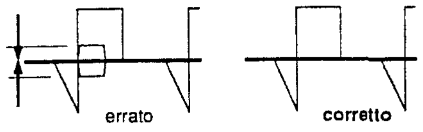
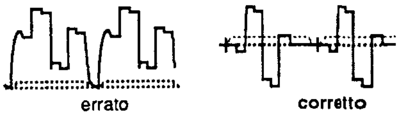
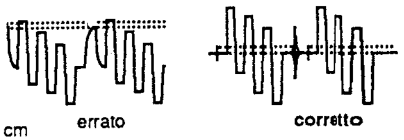
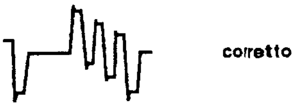
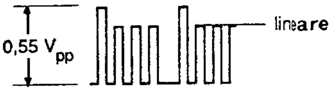
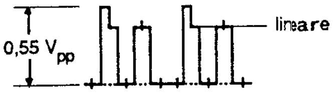
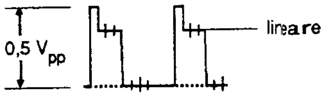
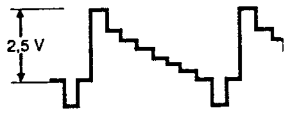
**Strumenti :**
oscilloscopio, sonda 10:1, generatore video, frequenzimetro
**Lavori da eseguire dopo la sostituzione del modulo: –**

| D Abgleich | Vorbereitung | Betriebsart | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. Freilauffrequenz<br>- Bypass<br>- Speicher | Frequenzzähler:<br>IC 3910-(14)<br>IC 4130-(14) | EE-Betrieb ohne Signal | R 3905<br>R 4125 | Frequenz auf 15625 Hz ± 10 Hz einstellen. |
| 2. SSC-Impulsamplitude<br>- Bypass | Oszilloskop:<br>Kanal A: IC 3840-(24)<br>Kanal B: Stecker BS 1-2<br>Trigger: Kanal B (H) | EE-Betrieb | R 3920 | H-Impuls auf 4,5 V einstellen. Burstamplitude (B > 8V) und V-Impulsamplitude (2V...3V) kontrollieren.  |
| - Speicher | Oszilloskop:<br>Kanal A: IC 4040-(24)<br>Kanal B: Stecker BS 1-5<br>Trigger: Kanal B (H) | | R 4140 | |
| 3. V-Impulsbreite<br>- Bypass | Oszilloskop:<br>Kanal A: MP ▽1<br>Kanal B: Stecker BS 1-2<br>Trigger: Kanal B (V) | EE-Betrieb | R 3930 |  |
| - Speicher | Oszilloskop:<br>Kanal A: MP ▽2<br>Kanal B: Stecker BS 1-5<br>Trigger: Kanal B (V) | | R 4150 | |
| 4. PAL-Abgleich Chromaamplitude<br>- Bypass<br>- Speicher | IC 3840-(28) / IC 4040-(28) an +12 V legen.<br>Oszilloskop:<br>IC 3840-(15)<br>IC 4040-(15)<br>Trigger: Wie Abgleich 2. | EE-Betrieb (PAL-Farbbalkentestbild) | L 3806<br>L 4007 |  |
| Farboszillator<br>- Bypass<br>- Speicher | IC 3840-(17) / IC 4040-(17) an Masse legen. | | C 3838<br>C 4038 | Durchlaufende Farbbalken auf dem Bildschirm zum Stillstand bringen. Anschließend Verbindungen der Pins 17 nach Masse und der Pins 28 nach +12V trennen. |
| (B-Y)-Signal<br>- Bypass<br>- Speicher | Oszilloskop:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Wie Abgleich 2. | EE-Betrieb (PAL-Farbbalkentestbild) | L 3849<br>L 4049<br>wechselweise |  |
| - Bypass<br>- Speicher | | EE-Betrieb (Demodulations-Testbild) | R 3850<br>R 4050 |  |
| 5. SECAM-Abgleich Referenzkreis (Rot)<br>- Bypass<br>- Speicher | Oszilloskop:<br>IC 3840-(1)<br>IC 4040-(1)<br>Trigger: Wie Abgleich 2. | EE-Betrieb (SECAM-Farbbalkentestbild) | L 3875<br>L 4100 |  |
| Referenzkreis (Blau)<br>- Bypass<br>- Speicher | Oszilloskop:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Wie Abgleich 2. | | L 3882<br>L 4107 |  |
| Identifikation<br>- Bypass<br>- Speicher | Oszilloskop:<br>IC 3840-(21)<br>IC 4040-(21)<br>Trigger: Wie Abgleich 2. | | L 3870<br>L 4095 | Auf Maximum abgleichen. |
| Amplitude der Farbpakete<br>- Bypass<br>- Speicher | Oszilloskop:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Wie Abgleich 2. | | L 3818<br>L 4018 | B-Y-Signal auf minimale Überschwinger einstellen.  |
| 6. Matrix-Abgleich B-Signalamplitude | Oszilloskop: BS 2-2<br>Trigger: Wie Abgleich 2. | EE-Betrieb (Farbbalken-Testbild) | R 3990<br>(Linearität)<br>R 4505<br>(Amplitude) |  |
| R-Signalamplitude | Oszilloskop: BS 2-3<br>Trigger: Wie Abgleich 2. | | R 4520<br>(Amplitude) |  |
| G-Signalamplitude | Oszilloskop: BS 2-4<br>Trigger: Wie Abgleich 2. | | R 4535<br>(Linearität)<br>R 4540<br>(Amplitude) |  |
| 7. Aussteuerung der A/D-Wandler<br>- Y-Amplitude | Oszilloskop: IC 4210-(16)<br>Trigger: Wie Abgleich 2. | EE-Betrieb (Farbbalken-Testbild) | R 4195 |  |
| - U-Amplitude | Oszilloskop: IC 4230-(13) | | R 4080 | Signalamplitude auf 2,6 $V_{ss}$ einstellen |
| - V-Amplitude | Oszilloskop: IC 4250-(13)<br>Trigger: Wie Abgleich 2. | | R 4065 | |
| 8. Ausgangsspannung der D/A-Wandler<br>- Y-Amplitude (Speicher) | Oszilloskop: IC 4555-(8)<br>IC 4490-(8)<br>Trigger: Wie Abgleich 2. | EE-Betrieb (Farbbalken-Testbild) | R 4410 | Amplitude des Y-Signals (Speicher) - IC 4490-(8) auf gleiche Amplitude wie die des Bypasses - IC 4555-(8) einstellen. |
| - U-Amplitude (Speicher) | Oszilloskop: IC 4555-(2)<br>IC 4490-(4)<br>Trigger: Wie Abgleich 2. | | R 4435 | Amplitude des U-Signals (Speicher) - IC 4490-(4) auf gleiche Amplitude wie die des Bypasses - IC 4555-(2) einstellen. |
| - V-Amplitude (Speicher) | Oszilloskop: IC 4555-(3)<br>IC 4490-(10)<br>Trigger: Wie Abgleich 2. | | R 4460 | Amplitude des V-Signals (Speicher) - IC 4490-(10) auf gleiche Amplitude wie die des Bypasses - IC 4555-(3) einstellen. |

| (GB) Adjustment | Preparation | Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. Free running frequency<br>- Bypass<br>- Memory | Frequency counter:<br>IC 3910-(14)<br>IC 4130-(14) | EE mode without signal | R 3905<br>R 4125 | Set frequency to 15625 Hz. |
| 2. SSC puls amplitude<br>- Bypass<br>- Memory | Oscilloscope:<br>Channel A: IC 3840-(24)<br>Channel B: Plug BS 1-2<br>Trigger: Channel B (H)<br>Oscilloscope:<br>Channel A: IC 4040-(24)<br>Channel B: Plug BS 1-5<br>Trigger: Channel B (H) | EE mode | R 3920<br>R 4140 | Set H-puls to 4,5V. Control burst amplitude (> 8V) and V-puls amplitude (2V...3V).<br> |
| 3. V-puls width<br>- Bypass<br>- Memory | Oscilloscope:<br>Channel A: MP ▽1<br>Channel B: Plug BS 1-2<br>Trigger: Channel B (V)<br>Oscilloscope:<br>Channel A: MP ▽2<br>Channel B: Plug BS 1-5<br>Trigger: Channel B (V) | EE mode | R 3930<br>R 4150 | 2. Field<br> |
| 4. PAL adjustment<br>Chroma amplitude<br>- Bypass<br>- Memory | Connect IC 3840-(28) / IC 4040-(28) to +12 V.<br>Oscilloscope:<br>IC 3840-(15)<br>IC 4040-(15)<br>Trigger: Like adjustment 2. | EE mode (PAL colour bar test signal) | L 3806<br>L 4007 |  |
| Colour oscillator<br>- Bypass<br>- Memory | Connect IC 3840-(17) / IC 4040-(17) to chassis.<br>Frequency counter:<br>IC 3840-(15)<br>IC 4040-(15) | EE mode (PAL colour bar test signal) | C 3838<br>C 4038 | Bring the colour bars which are running through to a standstill. Afterwards disconnect the connections from pins 17 to chassis and from pins 28 to +12V. |
| (B-Y) signal<br>- Bypass<br>- Memory | Oscilloscope:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Like adjustment 2. | EE mode (PAL colour bar test signal) | L 3849<br>L 4049<br>alternately |  |
| - Bypass<br>- Memory | | EE mode (Demodulation test signal) | R 3850<br>R 4050 |  |
| 5. SECAM adjustment<br>Reference circuit (Red)<br>- Bypass<br>- Memory | Oscilloscope:<br>IC 3840-(1)<br>IC 4040-(1)<br>Trigger: Like adjustment 2. | EE mode (SECAM colour bar test signal) | L 3875<br>L 4100 |  |
| Reference circuit (Blue)<br>- Bypass<br>- Memory | Oscilloscope:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Like adjustment 2. | | L 3882<br>L 4107 |  |
| Identification<br>- Bypass<br>- Memory | Oscilloscope:<br>IC 3840-(21)<br>IC 4040-(21)<br>Trigger: Like adjustment 2. | | L 3870<br>L 4095 | Set to maximum. |
| Colour amplitude<br>- Bypass<br>- Memory | Oscilloscope:<br>IC 3840-(3)<br>IC 4040-(3)<br>Trigger: Like adjustment 2. | | L 3818<br>L 4018 | Adjust minimum overshoots.<br> |

|  |  |  |  |  |
|---|---|---|---|---|
| 6. Matrix adjustment<br>B-signal amplitude | Oscilloscope: BS 2-2<br>Trigger: Like adjustment 2. | EE mode (Colour bar test signal) | R 3990 (Linearity)<br>R 4505 (Amplitude) |  |
| R-signal amplitude | Oscilloscope: BS 2-3<br>Trigger: Like adjustment 2. |  | R 4520 (Amplitude) |  |
| G-signal amplitude | Oscilloscope: BS 2-4<br>Trigger: Like adjustment 2. |  | R 4535 (Linearity)<br>R 4540 (Amplitude) |  |
| 7. Output voltage of the A/D converter<br>- Y-amplitude | Oscilloscope: IC 4210-(16)<br>Trigger: Like adjustment 2. | EE mode (Colour bar test signal) | R 4195 |  |
| - U-amplitude<br>- V-amplitude | Oscilloscope: IC 4230-(13)<br>Oscilloscope: IC 4250-(13)<br>Trigger: Like adjustment 2. |  | R 4080<br>R 4065 | Set the signal amplitude to 2,6 $V_{pp}$. |
| 8. Output voltage of the D/A converter<br>Y-amplitude (Memory) | Oscilloscope: IC 4555-(8)<br>IC 4490-(8)<br>Trigger: Like adjustment 2. | EE mode (Colour bar test signal) | R 4410 | Set the amplitude of the Y-signal (Memory) - IC 4490-(8) - to the same amplitude as that of the Bypass - IC 4555-(8). |
| - U-amplitude (Memory) | Oscilloscope: IC 4555-(2)<br>IC 4490-(4)<br>Trigger: Like adjustment 2. |  | R 4435 | Set the amplitude of the U-signal (Memory) - IC 4490-(4) - to the same amplitude as that of the Bypass - IC 4555-(2). |
| - U-amplitude (Memory) | Oscilloscope: IC 4555-(3)<br>IC 4490-(10)<br>Trigger: Like adjustment 2. |  | R 4460 | Set the amplitude of the V-signal (Memory) - IC 4490-(10) - to the same amplitude as that of the Bypass - IC 4555-(3). |

| Ⓘ Taratura | Preparazione | Funziona-mento | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Freq. reg. libero<br>- bypass<br>- memoria | Frequenzimetro:<br>IC 3910-(14)<br>IC 4130-(14) | Funzionam. EE senza segnale | R 3905<br>R 4125 | Regolare la frequenza 15625 Hz ± 10 Hz . |
| 2. Ampiezza impulso SSC<br>- bypass<br>- memoria | Oscilloscopio:<br>canale A: IC 3840-(24)<br>canale B: spina BS 1-2<br>trigger: canale B (H)<br>Oscilloscopio:<br>canale A: IC 4040-(24)<br>canale B: spina BS 1-5<br>trigger: canale B (H) | Funzionam. EE | R 3920<br>R 4140 | Regolare imp. orizz. a 4,5 V. Controllare amp. burst (B > 8V) ed amp. impulso vert. (2V...3V).  |
| 3. Largh. imp. V<br>- bypass<br>- memoria | Oscilloscopio:<br>canale A: pun. mis. ▽1<br>canale B: spina BS 1-2<br>trigger: canale B (V)<br>Oscilloscopio:<br>canale A: pun. mis. ▽2<br>canale B: spina BS 1-5<br>trigger: canale B (V) | Funzionam. EE | R 3930<br>R 4150 |  |
| 4. Taratura PAL ampiezza croma<br>- bypass<br>- memoria | Collegare IC 3840-(28) / IC 4040-(28) a +12 V.<br>Oscilloscopio:<br>IC 3840-(15)<br>IC 4040-(15)<br>trigger: v. taratura 2 | Funzionam. EE (monoscopio barre colore PAL) | L 3806<br>L 4007 |  |
| Oscill. colore<br>- bypass<br>- memoria | Collegare IC 3840-(17) / IC 4040-(17) a massa. |  | C 3838<br>C 4038 | Fermare le barre colore in movimento sullo schermo. Infine togliere i collegamenti tra pin 17 e massa e tra pin 28 e +12V. |

|  |  |  |  |  |
|---|---|---|---|---|
| Segnale (B-Y)<br>- bypass<br>- memoria | Oscilloscopio:<br>IC 3840-(3)<br>IC 4040-(3)<br>trigger: v. taratura 2. | Funzionam. EE (monoscopio barre colore PAL) | L 3849<br>L 4049<br>alternando |  |
| - bypass<br>- memoria |  | Funzionam. EE (monoscopio con demodulatore) | R 3850<br>R 4050 |  |
| 5. Taratura SECAM<br>Circ. riferim. (rosso)<br>- bypass<br>- memoria | Oscilloscopio:<br>IC 3840-(1)<br>IC 4040-(1)<br>trigger: v. taratura 2. | Funzionam. EE (monoscopio barre colore SECAM) | L 3875<br>L 4100 |  |
| Circ. riferim. (blu)<br>- bypass<br>- memoria | Oscilloscopio:<br>IC 3840-(3)<br>IC 4040-(3)<br>trigger: v. taratura 2. |  | L 3882<br>L 4107 |  |
| Identificaz.<br>- bypass<br>- memoria | Oscilloscopio:<br>IC 3840-(21)<br>IC 4040-(21)<br>trigger: v. taratura 2. |  | L 3870<br>L 4095 | Tamare al massimo. |
| Ampiezza pacch. croma<br>- bypass<br>- memoria | Oscilloscopio:<br>IC 3840-(3)<br>IC 4040-(3)<br>trigger: v. taratura 2. |  | L 3818<br>L 4018 | Regolare il segnale B-Y per la minimo sovraoscillazione.<br> |
| 6. Tarat. matrice<br>- Amp. segnale B | Oscilloscopio: BS 2-2<br>trigger: v. taratura 2. | Funzionam. EE (monoscopio barre colore) | R 3990<br>(linearità)<br>R 4505<br>(ampiezza) |  |
| - Amp. segnale R | Oscilloscopio: BS 2-3<br>trigger: v. taratura 2. |  | R 4520<br>(ampiezza) |  |
| - Amp. segnale G | Oscilloscopio: BS 2-4<br>trigger: v. taratura 2. |  | R 4535<br>(linearità)<br>R 4540<br>(ampiezza) |  |
| 7. Pilotaggio convert. A/D<br>- Ampiezza Y | Oscilloscopio: IC 4210-(16)<br>trigger: v. taratura 2. | Funzionam. EE (monoscopio barre colore) | R 4195 |  |
| - Ampiezza U<br>- Ampiezza V | Oscilloscopio: IC 4230-(13)<br>Oscilloscopio: IC 4250-(13)<br>trigger: v. taratura 2. |  | R 4080<br>R 4065 | Regolare a 2,6 $V_{pp}$ l'ampiezza del segnale. |
| 8. Tens. uscita convert. D/A<br>- Ampiezza Y (memoria) | Oscilloscopio: IC 4555-(8)<br>IC 4490-(8)<br>trigger: v. taratura 2. | Funzionam. EE (monoscopio barre colore) | R 4410 | Regolare l'ampiezza del segnale Y (memoria) - IC 4490-(8) sul valore ottenuto con bypass -IC 4555-(8). |
| - Ampiezza U (memoria) | Oscilloscopio: IC 4555-(2)<br>IC 4490-(4)<br>trigger: v. taratura 2. |  | R 4435 | Regolare l'ampiezza del segnale U (memoria) - IC 4490-(4) sul valore ottenuto con bypass -IC 4555-(2). |
| - Ampiezza V (memoria) | Oscilloscopio: IC 4555-(3)<br>IC 4490-(10)<br>trigger: v. taratura 2. |  | R 4460 | Regolare l'ampiezza del segnale V (memoria) - IC 4490-(10) sul valore ottenuto con bypass- IC 4555-(3). |

# (D) Tonbaustein

## Standard-Ton

### Funktionsübersicht

Die bei Aufnahme vom AUDIO IN/OUT-Teil aufbereiteten NF-Signale gelangen im Standard-Ton-Teil zum Aufnahmeeingang des IC 1210-(11). Das ausgewählte NF-Signal wird im Standard-Ton-Teil für die Aufzeichnung aufbereitet.

Bei Wiedergabe wird das NF-Signal vom AW-Kopf abgenommen, verstärkt und dem AUDIO IN/OUT-Teil zugeführt.

### 1. Aufnahme

Vom AUDIO IN / OUT-Teil gelangt das ausgewählte NF-Signal über IC 1210-(11) an einen linearen Verstärker (LINE), der es um 35 dB verstärkt. An Pin 14 verläßt das NF-Signal das IC 1210. Nach dem Kondensator C 1250 teilt sich der Signalweg. Zum einen wird es über IC 1210-(15) einem Pegelregler (ALC-Automatic Level Control) zugeführt, der den Eingangspegel an IC 1210-(11) konstant hält. Zum anderen durchläuft das NF-Signal eine Zeilenfrequenzsperre und zwischen IC 1210-(16) und IC 1210-(17) eine Treiberstufe (BF-BUFFER). Über IC 1210-(20) erreicht das NF-Signal den integrierten Aufnahme-Entzerrerverstärker (REC). An Pin 24 verläßt es den IC 1210 und gelangt über Steckerkontakt L1A-1, wo es zur Vormagnetisierungs-Spannung addiert wird, zum AW-Kopf. Die Vormagnetisierungs-Spannung ist mit R 1322 einstellbar. Das andere Ende des AW-Kopfes liegt über L 1A-2 und IC 1210-(4) an Masse.

Bei Nachvertonung koppelt man für die Trick-Schaltung das NF-Signal über C 1287 aus, richtet es im IC 1290 gleich und steuert mit der gewonnenen, signalabhängigen Gleichspannung über T 1305 den VM-Oszillator.

Für die Funktion "LP" wird die Umschaltung der Aufnahme-Entzerrung mit dem Schalter EQ 1 im IC 1210 durchgeführt.

### 2. Löschoszillator

Ein selbstschwingender Oszillator (CT 1327) erzeugt die Vormagnetisierungsspannung (VM). Ein Teil dieser Spannung wird ausgekoppelt (CR 1327, CC 1335) und dem T 1340 zugeführt. Dessen auf Resonanz abgestimmter Ausgangskreis F 1340 steuert über den Steckerkontakt L1A-4 den Tonlöschkopf an. Diese Oszillatorstufe erhält ihre Betriebsspannung bei Nachvertonung in Trick-Stellung über T 1305 in Abhängigkeit vom anstehenden NF-Signal.

Der Oszillator für den Hauptlöschkopf befindet sich auf einer separaten Platine im Laufwerk.

### 3. Wiedergabe

Bei Wiedergabe erhält der AW-Kopf über IC 1210-(32) und Steckerkontakt L 1A-1 Massepotential. Das vom AW-Kopf abgetastete NF-Signal gelangt über L 1A-2 an IC 1210-(4). Es durchläuft im IC 1210 den integrierten Wiedergabeentzerrer und wird über IC 1210-(8) und -(9) dem A/W-Schalter im IC 1210 zugeführt. Anschließend wird es in einem linearen Verstärker (LINE) um 35 dB verstärkt. An Pin 14 verläßt das NF-Signal das IC 1210. Nach dem Kondensator C 1250 durchläuft das NF-Signal eine Zeilenfrequenzsperre und zwischen IC 1210-(16) und IC 1210-(17) eine Treiberstufe (BF-BUFFER). Das NF-Signal wird über den Koppelkondensator C 1251 dem AUDIO IN-/OUT-Teil zugeführt. Bei "LP"-Wiedergabe bewirken die Schalter EQ 1 bzw. $\overline{\text{EQ 1}}$ und $\overline{\text{EQ 2}}$ die Entzerrungs-Umschaltung.

### 4. Stummschaltung

Der Mute-Befehl vom Ablaufrechner B, IC 190, dient dazu die Tonausgänge des IC 1210 bei allen Funktionen, außer Wiedergabe und Auf-

# (GB) Sound Module

## Standard Sound

### Functional Overview

On Record, AF signals prepared in the Audio IN/OUT is fed into the Standard-Sound-Stage to the record input of IC 1210-(11). The selected AF signal is processed for recording in the Standard-Sound-Stage.

On Playback the AF signal obtained from the AW Head is amplified and then fed to the Audio IN/OUT stage.

### 1. Record

From the Audio IN/OUT Stage, the signal from the selected AF Signal source is fed via IC 1210-(11) to an internal linear amplifier (LINE), in which it is amplified by 35 dB. The AF signal leaves the IC 1210 from Pin 14. After the capacitor C 1250 the signal path divides. In one path it is fed via IC 1210-(15) to a control stage (ALC - Automatic Level Control), which holds the input level to the IC 1210-(11) constant. In the other path, the AF Signal passes through a line frequency trap and a driver stage (BF-BUFFER) between IC 1210-(16) and IC 1210-(17).From IC 1210-(20) the AF Signal reaches the integrated record-equalising amplifier (REC). The signal leaves the IC 1210 from Pin 24 and passes via the plug contact L 1A-1, to which the record bias voltage is added, to the AW Head. The record bias voltage is adjustable with R 1322. The other end of the AW Head is connected to chassis by L 1A-2 and IC 1210-(4).

On Sound Dubbing the AF Signal is coupled out for the trick circuit via C 1287, rectified in IC 1290 and used, with the regained, signal dependant DC Voltage via T 1305, for control of the Bias Oscillator. For the function "LP", the switchover for the record equalising is carried out by the switch EQ1 in IC 1210.

### 2. Erase Oscilator

A free-running oscillator (CT 1327) generates the record bias voltage (VM). A portion of this voltage is coupled out (CR 1327, CC 1335) and is fed to T 1340. This drives, via the resonance determining output coil F 1340, the sound erase head via the plug contact L1A-4. This oscillator stage receives operating supply, on Sound Dubbing in the Trick-setting via T 1305, depending upon the AF signal.

The oscillator for the Main Erase Head is located on a separate panel in the mechanics.

### 3. Playback

On playback the AW-Head is connected to chassis via IC 1210-(32) and the plug contact L A1-1. The AF signal picked up by the AW head is fed via L 1A-2 to IC 1210-(4). The signal passes in IC 1210 to an integrated playback equalising amplifier and is then fed via IC 1210-(8) and -(9) to a A/W switch in IC 1210. Afterwards it is amplified in a Linear Amplifier (LINE) by 35 dB. The AF signal leaves the IC 1210 from Pin 14. After the capacitor C 1250 the AF signal passes through a line frequency trap and a driver stage (BF-BUFFER) connected between IC 1210-(16) and IC 1210-(17). The AF signal is fed via the coupling capacitor C 1251 to the Audio IN/OUT stage. On "LP" playback the equalising circuit is switched over by the switch EQ1 or $\overline{\text{EQ 1}}$ and $\overline{\text{EQ 2}}$.

### 4. Muting Circuit

The mute command from the Sequence Computer B, IC 190, mutes the sound path in all functions, with the exception of playback and record, and also in the case of a servo fault. For this the IC 1210 receives on Pin 18

# (I) Modulo audio

## Audio standard

### Prospetto delle funzioni

In registrazione, i segnali BF provenienti dalla sezione AUDIO IN/OUT giungono nel modulo audio standard all'ingresso di registrazione IC 1210-(11). Il segnale BF scelto viene elaborato nel modulo audio per la registrazione.

In riproduzione, il segnale BF viene prelevato dalla testina registr./riprod. ed amplificato. Successivamente esso viene inoltrato alla sezione AUDIO IN/OUT.

### 1. Registrazione

Dalla sezione AUDIO IN/OUT il segnale BF scelto giungo tramite IC 1210-(11) ad un amplificatore lin. (LINE) che lo amplifica di ca. 35 dB. Il segnale BF lascia l'IC 1210 al pin 14. Dopo il C 1250 il percorso del segnale si suddivide. Da una parte, attraverso IC 1210-(15) viene inviato ad un regolatore di livello (ALC = Automatic Level Control) che mantiene costante il livello d'ingresso su IC 1210-(11) e dall'altra percorre una trappola a frequenza di riga ed uno stadio pilota (BF-BUFFER) tra IC 1210-(16) e -(17). Mediante IC 1210-(20) il segnale BF arriva all'equalizzatore di registraz. integrato (REC). Al pin 14 esso abbandona l'IC 1210 e attraverso L1A-1, dove viene addizionato alla tensione di premagnetizzaz., giunge alla testina registr./riprod. La tensione di premagnetizzaz. è regolabile con R 1322. L'altro terminale di questa testina si chiude a massa attraverso L1A-2 e IC 1210-(4).

Nel doppiaggio il segnale BF viene prelevato da C 1287 per il circuito Trick (=effetti speciali), quindi raddrizzato in IC 1290 e la componente continua dipendente dal segnale ottenuta comanda l'oscillatore VM tramite T 1305. Per la funzione "LP" la commutazione dell'equalizzatore di registrazione viene effettuata con EQ 1 nell'IC 1210.

### 2. Oscillatore di cancellazione

Uno stadio autooscillante (CT 1327) genera la tensione di premagnetizzazione (VM). Una parte di questa tensione viene prelevata da CR 1327, CC 1335 ed applicata al transistor T 1340, il cui circuito risonante F 1340 comanda la testina di cancell. audio attraverso il contatto L1A-4. Questo stadio oscill. riceve la sua tensione di regime in fase di doppiaggio, in pos. Trick, tramite T 1305 dipendentemente dal segnale BF disponibile.

L'oscillatore per la testina di cancellazione completa si trova su una piastra separata della meccanica.

### 3. Riproduzione

In riproduzione, la testina R/A riceve potenziale di massa attraverso IC 1210-(32) ed il contatto L1A-1. Il segnale BF proveniente dalla testina registr./riprod. giunge ad IC 1210-(4) per mezzo del contatto L 1A-2. Nell'IC esso percorre l'equalizzatore di riproduz. integrato ed attraverso IC 1210-(8) e -(9) giunge al commutatore R/A. Infine esso viene amplificato di ca. 35 dB in un amplificatore lineare (LINE). Al pin 14 il segnale BF lascia l'IC 1210. Dopo il condensatore C 1250 il segnale BF percorre una trappola a frequenza di riga ed uno stadio pilota (BF-BUFFER) tra IC 1210-(16) e -(17). Il segnale BF viene inviato alla sezione AUDIO IN/OUT tramite il condensatore di accoppiamento C 1251. In riproduzione "LP", i commutatori EQ 1 risp.te $\overline{\text{EQ1}}$ e $\overline{\text{EQ 2}}$ provvedono alla commutazione dell'equalizzatore.

### 4. Circuito di silenziamento

L'ordine Muting proveniente dal mod. comando funzioni B, IC 190, viene utilizzato per il silenziamento delle uscite audio di IC 1210 in tutte le funzioni ad eccezione che per riproduz. e registraz. così come in caso di anomalie nella servoregolazione. Per questo, l'ordine nahme, sowie bei Servofehlern stummzuschalten. Dazu erhalten der IC 1210 über Pin 18 sowie der Transistor CT 1245 den Befehl $U\uparrow\overline{\text{MUTE}}$. Durch CT 1245 wird gleichzeitig der Speicher-Elko C 1245 des Pegelreglers (ALC-Automatic Level Control) entladen.

### 5. Seriell/Parallel-Wandler

Die vom Hauptrechner B, IC 190, über das Schieberegister IC 975 im AUDIO IN / OUT-Teil seriell an IC 1275-(2) anstehenden Daten werden im IC 1275 decodiert und als parallele Daten den entsprechenden Stufen im Standard-Ton-Teil zugeführt.

## Audio - IN / OUT

### 1. Aufnahme

Das Schaltungsteil Audio-IN/OUT dient bei Aufnahme in erster Linie als Schalt- und Regelstufe. Die Audiosignale an den Pins 1, 12...15 der Eingangswahlschalter IC 870 und IC 880 werden wahlweise, gesteuert über die Pins 9, 10, 11, nach Pin 3 geschaltet (siehe Tabelle) und zu IC 900-(9), -(13) weitergeleitet. Im IC 900 durchlaufen die Signale je einen weiteren Wahlschalter und die "Master-" und Output-Stufen, wo die Pegeleinstellung erfolgt. Bei Handaussteuerung legt dazu der "MASTER-Einsteller" R 992 eine Gleichspannung an den Ablaufrechner B. Bei automatischer Aussteuerung erhält er die NF-Hüllkurvenspannung von IC 980. Der Ablaufrechner B errechnet aus den anstehenden Gleichspannungen den Sollwert und bestimmt über den I$^2$C-Bus und IC 900 den Pegel. Gleichzeitig speist er auch das Aussteuerungsdisplay. Nach den Ausgängen IC 900-(21)...-(24) teilt sich der NF-Signalweg:

- Von IC 900-(23), -(24) wird das NF-Signal direkt dem FM-Ton-Schaltungsteil zugeführt.
- Über den Spurwahlschalter (HEADPHONE SWITCH) IC 940 und KH1-1, -2 gelangen die NF-Signale zum Kopfhörerverstärker, IC 2130 auf dem Chromabaustein.
- Das Schalt-IC 955, an dessen Ausgängen die Stereo-NF-Signale addiert werden, führt das entstandene Mono-NF-Signal über einen Operationsverstärker IC 945 dem Standard-Ton und dem Modulator zu.
- IC 980 richtet das NF-Signal gleich ( NF-Hüllkurvengleichrichter) und leitet es zum Ablaufrechner B weiter.
- Von IC 900-(23), -(24) gelangen die NF-Signale über den Spurwahlschalter (LINE SWITCH) IC 910 und den Verstärker IC 915 zu den Ausgängen LINE OUT, AV1 und AV2. Die Pegel werden dabei vom Ablaufrechner B über den I$^2$C-Bus im IC 900 eingestellt. Die Steuerspannung hierzu liefert der OUTPUT-Einsteller R 993 über A3-12.

Bei Aufnahme sind über die Eingangswahlschalter IC 870/IC 880 die Eingänge "LINE, AV1, HF und CV (Camera-AV-Eingang) anwählbar. Betätigt man die "MIX"-Taste, so kann mittels der entsprechenden Einsteller (R 850, R 817, R 822) das Signal des LINE-Eingangs, des Mikrophon-Eingangs und des CV-Eingangs (über IC 870, IC 880) gemischt werden (IC 855). Das Summensignal steht dann an den Wahlschaltern IC 900-(10), -(14).

### 2. Wiedergabe

### 2.1 HIFI-Ton

Bei HiFi-Wiedergabe gelangen die NF-Signale vom FM-Ton-Schaltungsteil über die Verstärker (HIFI-OUT-AMP) IC 885, die Wahlschalter IC 870, IC 880 (Schalterstellung Pin 1 – Pin 3) und IC 900 zu den Ausgangswahlschaltern. Von hier werden sie wie bei Aufnahme zu den Ausgängen (LINE, AV1, AV2, Kopfhörer, Modulator) durchgeschaltet. Für die Displayanzeige richtet man die NF-Signale im IC 980 gleich und leitet sie über A3-1,-2 dem

and via the transistor CT 1245 the command $U\uparrow\overline{\text{MUTE}}$. The capacitor C 1245, which is part of the control circuit (ALC - Automatic Level Control), is discharged simultaneously by CT 1245.

### 5. Serial / Parallel Converter

The data received from the Sequence Computer B, IC 190, is received via the shift register IC 957 in the Audio IN/OUT Stage in serial by IC 1275-(2), is decoded in IC 1275 and is fed out as parallel data to the appropriate stages in the Standard-Sound-Stage.

## Audio - IN / OUT

### 1. Record

The Circuit Stage Audio-IN/OUT fulfills its most important task on Record by operating as the switching and control stage. The audio signals on Pins 1, 12...15 of the input selection IC 870 and IC 880 are selected by Pins 9, 10, 11 to Pin 3 (see table) and fed further on to IC 900-(9), -(13). In IC 900 the signals pass through a further selection switch to the "Master" and Output Stages in which the level adjustments are carried out. On Manual mode, a DC voltage is fed to the Sequence Computer B from the "Master-preset" R 992. On Automatic mode the preset receives a DC voltage dependant upon the AF-Envelope from IC 980. The Sequence Computer B calculates, from the DC voltage present, the reference value and determines the value via the I$^2$C Bus and IC 900. Simultaneously, the display drive is also provided. After the outputs from IC 900 (21)...-(24) the AF signal is routed as follows:

- From IC 900-(23), -(24) the AF signal is fed directly to the FM-sound Circuit Stage.
- From the Track Selection Switch (Headphone Switch) IC 940 and KH1-1, -2 the AF signals are fed to the Headphone Amplifier, IC 2130 located on the Chroma Module.
- To the IC 955, at the outputs of which the Stereo-AF-Signals are added, which provides the corresponding Mono-AF-Signal to an operational amplifier IC 945 in the Standard-Sound Stage and also to the Modulator.
- To IC 980, which rectifies the AF signal (AF-Envelope Rectifier) and feeds the voltage to the Sequence Control Computer B.
- From IC 900-(23), -(24) the AF signal is applied via the selection switch (LINE Switch), IC 910 and the Amplifier IC 915 to the outputs Line Out, AV1 and AV2. The level is set, by the Sequence Computer B via the I$^2$C Bus, in IC 900. The control voltage for this is provided by the Output-Preset R 933 via A3-12.

On Record the inputs LINE, AV1, HF and CV (Camera AV Input) can be selected via the input selection switch IC 870/IC 880. If the "Mix" Button is depressed, by adjusting the appropriate preset (R 850, R 817, R 833), the signal at the LINE input can be mixed with the Microphone inputs and the CV inputs (via IC 870, IC 880) in IC 855. The sum signal is then present at the selection switches in IC 900-(10), -(14).

### 2. Playback

### 2.1 HiFi-Sound

On HiFi Playback the AF signal from the FM-Sound Circuit Stage is fed via the amplifier (HiFi-OUT-AMP) IC 885, the selection switch IC 870, IC 880 (switch position in 1-Pin 3), and IC 900 to the output selection switches. From here, as occours on record, the signal is connected to the outputs (LINE, AV1, AV2, Headphones, Modulator). For the display indication, the AF signals are rectified in IC 980 and fed via A3-1, -2 to the Sequence Computer B.

$U\uparrow\overline{\text{MUTE}}$ viene applicato ad IC 1210 tramite il pin 18 ed il CT 1245. Mediante questo transistor avviene contemporaneamente la scarica dell´elettrolitico C 1245 del regolatore di livello (ALC-Automatic Level Control).

### 5. Convertitore seriale/parallelo

I dati che si formano serialmente in IC 1275-(2) provengono dal mod. comando funzioni B, IC 190, quindi attraverso un registratore di scorrimento IC 975 nella sezione AUDIO IN/OUT vengono decodicati nell´IC 1275 ed inviati come dati paralleli ai vari stadi del sezione audio standard.

## Audio IN / OUT

### 1. Registrazione

Il modulo audio IN/OUT serve in registrazione principalmente come stadio di commutazione e di regolazione. I segnali audio presenti ai pin 1, 12...15 dei selettori d´ingresso IC 870/IC 880 vengono commutati dai pin 9, 10, 11 verso il pin 3, a seconda della situazione indicata in tabella, e quindi inoltrati ad IC 900-(9), -(13). Nell´integrato ogni segnale percorre un ulteriore selettore e gli stadi "Master" e di uscita, dove ha luogo la regolazione di livello. Con pilotaggio manuale il regolatore "Master" R 992 fornisce inoltre una tensione continua al µC del mod. comando funzioni B. In caso di pilotaggio automatico esso riceve la tensione di inviluppo BF da IC 980. Il µC del mod. comando funzioni B calcola il valore nominale dalle tensioni continue applicate e determina il livello attraverso il bus I$^2$C ed IC 900. Contemporaneamente esso alimenta anche il display di pilotaggio. Dopo le uscite IC 900-(21)...-(24) il percorso del segnale BF si suddivide:

- Da IC 900-(23), -(24) il segnale BF viene inviato direttamente alla sezione audio FM.
- I segnali BF giungono all´amplificatore di cuffia (IC 2130) del modulo croma mediante un commutatore di traccia (HEADPHONE SWITCH) IC 940 e KH 1-1, -2.
- L´integr. commut. IC 955, alle uscite del quale vengono aggiunti i segnali BF stereo, attraverso un amplificatore operazionale IC 945 fornisce il segnale BF mono ottenuto al mod. audio standard ed al modulatore.
- IC 980 rettifica il segnale BF (rettificatore di inviluppo BF) e lo dà al µC del mod. comando funzioni B.
- Da IC 900-(23), -(24) i segnali BF percorrono il commutatore di traccia (LINESWITCH) IC 910 e l´amplificatore IC 915, per giungere alle uscite LINE OUT, AV 1 e AV 2. I livelli vengono in tal caso regolati nell´IC 900 dal µC di comando B tramite il bus I$^2$C. La tensione di comando necessaria viene fornita dal regolatore OUTPUT R 993 attraverso A3-12.

In registrazione gli ingressi LINE, AV1, HF e CV (ingresso AV per telecamera) possono venir scelti dal selettore IC 870/IC 880. Premendo il tasto "Mix", per mezzo dei relativi regolatori (R 850, R 817, R 822) in IC 855 si può mescolare i segnali provenienti dagli ingressi LINE, microfono e CV (tramite IC 870, IC 880). Il segnale somma è poi presente ai commutatori IC 900-(10), -(14).

### 2. Riproduzione

### 2.1. Audio HiFi

In riproduzione HiFi, i segnali BF provenienti dalla sezione audio FM passando per l´amplificatore (HiFi-OUT-AMP) IC 885, i selettori IC 870, IC 880 (posizione dei commutatori Pin 1 - Pin 3) ed IC 900 giungono ai selettori d´uscita. Da qui essi vengono inoltrati come in registrazione alle uscite (LINE, AV1, AV2, cuffia, modulatore). Per le indicazioni del display, i segnali BF vengono raddrizzati nell´IC 980 ed inviati al µC di comando B attraverso A3-1, -2.

Ablaufrechner B zu.

**2.2 Standard-Ton**

Bei Wiedergabe steht das Standard-Ton-Signal am Wahlschalter IC 900-(11). Es ist mittels der "Tone select"-Taste über den $I^2C$-Bus anwählbar. Der weitere Signalweg verläuft analog zur HiFi-Ton-Wiedergabe.

**2.3 Nachvertonung**

Bei Nachvertonung werden die LINE-Eingänge aktiviert. Die anstehenden Signale gelangen über die Eingangswahlschalter IC 870, IC 880 (Schalterstellung Pin 15 – Pin 3) zum IC 900. In diesem werden sie wie bei Aufnahme vom Ablaufrechner B ausgeregelt und stehen an allen Ausgängen und am Standard-Ton-Eingang für die Aufnahme zur Verfügung. Des weiteren kann zur Nachvertonung die Funktion "MIX" zusätzlich angewählt werden. Bei dieser Funktionsweise werden die Eingangswahlschalter IC 870, IC 880 auf "HiFi" gesetzt (Schalterstellung Pin 1 – Pin 3). Der HiFi-Ton einer Aufnahme wird nun über den Einsteller R 822 mit den Signalen von den LINE- und Mikrophoneingängen gemischt und über den Verstärker, IC 855, und die Eingangswahlschalter IC 900-(10), -(14) auf den normalen Nachvertonungsweg geschaltet. Stehen die Eingangssteller R 817/R 850 auf "0", ist es möglich nur den HiFi-Ton einer Aufnahme auf die Längsspur zu überspielen.

**2.2 Standard Sound**

On Playback the Standard-Sound signal is present at the selection switch IC 900-(11). This input can be selected via the $I^2C$ Bus by depressing the "Sound Select" Button. The path that follows is the same as for HiFi-Sound Playback.

**2.3 Sound Dubbing**

On Sound Dubbing the LINE-Inputs are activated. The signals present are fed via the input selection switch IC 870, IC 880 (switch position Pin 15 - Pin 3) to IC 900. In this IC the Sequence Computer B carries out the control of level as on record for all inputs, the signal is present on all outputs and is also fed to the Standard-Sound-Inputs for recording. In addition, for sound dubbing, the function "MIX" can additionally be selected. On this function mode the input selection switch IC 870, IC 880 are set to "HiFi" (switch position Pin 1 - Pin 3). The HiFi Sound of a recording is now mixed via the preset R 822 with the signals from the LINE and Microphone Inputs and fed via the amplifier IC 855 and the input selection switch IC 900-(10), -(14) to the usual sound dubbing path. If the input preset R 817/R 850 is set to "0", it is possible to transfer the HiFi sound track only onto the linear track.

**2.2 Audio standard**

In riproduzione, il segnale audio standard si trova al selettore IC 900-(11). Esso è selezionabile col tasto "Tone select" attraverso il bus $I^2C$. Il successivo percorso del segnale è analogo a quello in riproduzione audio HiFi.

**2.3 Doppiaggio**

Nel doppiaggio vengono attivati gli ingressi LINE. I segnali presenti giungono ad IC 900 mediante i selettori d'ingresso IC 870, IC 880 (posizione dei commutatori Pin 15 - Pin 3). Nell'integrato essi vengono elaborati come in registrazione dal µC del mod. comando funzioni B e successivamente resi disponibili a tutte le uscite ed all'ingresso audio standard per la registrazione. Inoltre per il doppiaggio può venir selezionata anche la funzione "Mix". Attivando questa funzione, tutti i selettori d'ingresso IC 870, IC 880 vengono posizionati su "HiFi" (posizione dei commutatori Pin 1 - Pin 3). L'audio HiFi di una registrazione viene ora mescolato ai segnali degli ingressi LINE e microfono col regolatore R 822 ed attraverso l'amplificatore, IC 855, ed i selettori d'ingresso IC 900-(10), -(14) condotto al normale percorso di postsonorizzazione. Se i regolatori d'ingresso R 817/R850 sono su "0", è possibile trascrivere solo l'audio HiFi di una registrazione sulla traccia longitudinale.

Eingangswahlschalter IC 870, IC 880
Input selection switch
Selettore d'ingresso

| | | Pin 9 | Pin 10 | Pin 11 |
|---|---|---|---|---|
| HiFi | (Pin 1 – Pin 3) | 1 | 0 | 0 |
| LINE | (Pin 15 – Pin 3) | 0 | 1 | 0 |
| AV | (Pin 13 – Pin 3) | 0 | 0 | 0 |
| HF | (Pin 14 – Pin 3) | 0 | 0 | 1 |
| CV | (Pin 12 – Pin 3) | 0 | 1 | 1 |

Ausgangswahlschalter IC 910, IC 940, IC 955
Output selection switch
Selettori d'uscita

| | Pin 9 | Pin 10 |
|---|---|---|
| Pin 1 – Pin 3<br>Pin 12 – Pin 13 | 0 | 0 |
| Pin 5 – Pin 3<br>Pin 14 – Pin 13 | 0 | 1 |
| Pin 2 – Pin 3<br>Pin 15 – Pin 13 | 1 | 0 |
| Pin 4 – Pin 3<br>Pin 11 – Pin 13 | 1 | 1 |

## HiFi Stereo-Ton

Da die Stereo-Ton-Kanäle symmetrisch aufgebaut sind, beschränken wir uns bei der Beschreibung auf den linken Kanal.

**Funktionsübersicht**

Im HiFi-Stereo-Schaltungsteil komprimiert man die Audiosignale um den Faktor 2. Anschließend werden sie mit 2 Trägerfrequenzen (1,4 MHz - linker und 1,8 MHz - rechter Kanal) frequenzmoduliert und über die beiden rotierenden Audioköpfe auf das Band aufgezeichnet.

Bei Wiedergabe wird die vom Band, über die rotierenden Audioköpfe abgetastete Information dem HiFi-Stereo-Schaltungsteil zugeführt. Nach der Demodulation expandiert man das Signal wieder auf die ursprüngliche Dynamik. Störungen, verursacht durch das Umschalten der Audioköpfe, eliminiert eine Extrapolatorschaltung.

**1. Aufnahme**

Bei Aufnahme gelangt das NF-Signal (L) vom IC 900-(24) des Audio-IN/OUT-Schaltungsteils über den Spannungsteiler CR 1025, CR 1026 auf den Eingang des Companders, IC 1050-(30). Danach durchläuft es einen Impedanzwandler, eine Kompressionsstufe und die Preemphasisstufen. Das Signal verläßt an IC 1050-(17) das IC und wird ihm über Pin 22 wieder zugeführt. Zwischen den Pins 22 und 21 durchläuft das komprimierte Signal einen aktiven Tiefpass und gelangt über den Fre-

## HiFi Stereo Sound

As the Stereo-Sound Channels are symmetrically constructed, the description has been limited to cover the left channel only.

**Functional Overview**

In the HiFi-Stereo Circuit Stage the Audio signals are compressed by a factor of 2. Subsequently, they are frequency modulated using two carrier frequencies (1.4 MHz-Left Channel and 1.8 MHz-Right Channel) and fed via the two rotating Audio Heads to be recorded onto the tape.

On Playback, the Rotating Audio Heads scan the information from the tape and it is fed to the HiFi-Stereo-Circuit Stage. After demodulation the signals are expanded to the original dynamic range. Interferences, caused by the switching of the Audio Heads, are eliminated by an Extrapolator circuit.

**1.Record**

On Record the AF signal (L) is fed from IC 900-(24) in the Audio-IN/OUT-Circuit Stage via the voltage divider CR 1025, CR 1026 to the input of the Compander, IC 1050-(30). From here the signal is fed to an Impedance Converter, a compression stage and the preemphasis stages. The signal leaves the IC 1050 on Pin 17 and is fed back to Pin 22. Between Pin 22 and Pin 21, the compressed signal passes through an active Low Pass Filter and is fed via the Frequency Deviation preset R 1053 and the A/W switchover IC 1055-(11), -(10) to the CIC

## Audio stereo HiFi

Poichè i canali audio stereo sono disposti simmetricamente vengono descritte solamente le funzioni circuitali del canale sinistro.

**Prospetto delle funzioni**

Nel modulo audio stereo i canali audio compressi di un fattore pari a 2. Infine essi vengono modulati in frequenza con 2 frequenze portanti (1,4 MHz per canale sinistro ed 1,8 MHz per canale destro) ed incisi sul nastro mediante le due testine audio rotanti.

In riproduzione, l'informazione prelevata sul nastro dalle testine rotanti viene data al modulo audio stereo. Dopo la demodulazione, il segnale viene espanso fino a riottenere la dinamica originale. I disturbi causati dalla commutazione delle testine audio vengono eliminati da un circuito speciale (extrapolator).

**1. Registrazione**

In registrazione, il segnale BF (L) giunge dall'IC 900-(24) del modulo audio IN/OUT attraverso il partitore di tensione CR 1025, CR 1026 all'ingresso del compensatore IC 1050-(30). Successivamente esso percorre un trasduttore d'impedenza, un compressore e gli stadi di deenfasi. Il segnale lascia l'IC 1050 al pin 17 e vi ritorna dal pin 22. Tra i pin 22 e 21, il segnale compresso attraversa un passabasso attivo e successivamente viene condotto al regolatore per la deviazione di frequenza R 1053 ed al commutatore R/A IC 1055-(11), -(10) prima di raggiungere il CIC 1150-(5). Nell'inquenzhubeinsteller R 1053 und den A/W-Umschalter IC 1055-(11), -(10) an CIC 1150-(5). Im CIC 1150 durchläuft das NF-Signal einen Hub-Begrenzer, die VCO-Stufe und einen Tiefpass, und steht an CIC 1150-(3) als 1,4 MHz-FM-Signal zur Verfügung. Dieses wird am Aufsprechstromeinsteller R 1118 mit dem von CIC 1150-(30) kommenden 1,8 MHz FM-Signal des rechten Kanals addiert. Anschließend führt man es über den Steckerkontakt KT 1-4 dem Kopfverstärker zu.

Beim Aufsprechen der beiden Trägerfrequenzen auf das Band ist die HF-Amplitude des 1,8 MHz-Trägers um ca. 8 dB größer, da dieser Träger vom nachfolgenden Videokopf stärker angelöscht wird. Somit ist gewährleistet, daß bei Wiedergabe die beiden HF-Träger annähernd die gleiche Amplitude haben.

**2. Wiedergabe**

Das Signal vom Band wird dem HiFi-Stereo-Schaltungsteil über KT 1-2, -3 zugeführt und an CIC 1150-(19), -(21) weitergeleitet. Die Kopfumschaltung erfolgt durch den Ablaufrechner A mittels des Kopfumschaltimpulses HI-Ton, der über Kontakt A3-8 im Audio-IN/OUT-Schaltungsteil und CIC 1150-(16) zugeführt wird. An CIC 1150-(23) wird das FM-Tonsignal ausgekoppelt und durch das Bandpass-Filter F 1097 (1,4 MHz-Links / 1,8 MHz-Rechts) getrennt. Anschließend führt man die Signale über CIC 1150-(8) bzw. CIC 1150-(25) den HF-Begrenzern und den Demodulatoren zu. Das demodulierte NF-Signal (L) verläßt das CIC 1150 an Pin 6 und gelangt über einen Spannungsteiler CR 1087 / CR 1085 zum Eingang der "Hold-Schaltung" CIC 1150-(1). Sie dient dazu Störungen im NF-Signal, bedingt durch den Kopfwechsel beim Abtasten des Signals, zu unterdrücken. An CIC 1150-(5) koppelt man das NF-Signal aus und führt es über den aktiven Tiefpass CT 1060, den A/W-Schalter IC 1055-(9), -(8) und den Pegelsteller WPL (R 1055) dem IC 1050-(28) zu. Im IC 1050 durchläuft es die Expansionsstufe und die Deemphasisstufen, bevor man es über IC 1050-(24) auskoppelt und dem Verstärker, IC 885, im Audio IN/OUT-Schaltungsteil zuführt.

**3. Rauschunterdrückung bei Aufnahme und Wiedergabe**

Um den vollen Dynamikbereich zu erhalten, erfolgt bei Aufnahme eine Komprimierung und bei Wiedergabe eine Expandierung des NF-Signals. Der IC 1050 enthält dazu zwei Regelkreise.

**4. HiFi-Ton-Kennung**

Der 1,4 MHz-Anteil der "FM vom Band" gelangt vom Filter 1097 über CIC 1150-(8) außer zur normalen Tonsignalverarbeitung auch an eine Auswerte-Schaltung, wo die FM-Hüllkurve in eine Gleichspannung umgesetzt wird. Diese Gleichspannung ist proportional der FM-Amplitude und bildet den Istwert für den Ablaufrechner B, dem dieser Wert über A3-9 (Audio-IN/OUT) und IC 190-(18) zugeführt wird. Liegt der Pegel über 1,7 V, wird die HiFi-Tonaufzeichnung wiedergegeben. Liegt der Pegel unter 1,5 V, schaltet der Ablaufrechner B (IC 190) auf den Standard-Ton um. Des weiteren verwendet man den Istwert über einen A/D-Wandler im Ablaufrechner (IC 190) als Regelgröße U/FMKT zur Trackinganzeige.

**5. Stummschaltung**

Zwei Mute-Schaltungen (CT 1084/ CT 1129) sorgen dafür, daß während Dropouts bei Wiedergabe die NF-Signale (L / R) an CIC 1150-(1) bzw. CIC 1150-(32) für die Länge des Dropouts abgeschaltet werden. Angesteuert werden diese Transistoren über CIC 1150-(11), der abhängig von Dropouts im FM-Signal vom Band einen High-Pegel ausgibt.

1150-(5). In CIC 1150 the AF signal passes through a Deviation limiter, the VCO stage and a Low Pass Filter and is present on CIC 1150-(3) as the 1.4 MHz-FM-Signal for processing. This is now added, at the record current preset R 1118, to the 1.8 MHz FM Signal containing the right channel. Subsequently, the combined signals are fed via plug contact KT1-9 to the Head Amplifier. For recording the two carrier frequencies onto tape, the HF amplitude of the 1.8 MHz carrier is 8 dB larger, as this carrier is erased more severely by the Video Heads. Due to this method, on playback, both HF carriers are recovered at the same amplitude.

**2. Playback**

The signal from the tape is fed to the Stereo-Circuit Stage via KT1-2, -3 to CIC 1150-(19), -(21). The Head switching over is carried out by the Sequence Computer A which produces the Head Switchover pulses HI-TON fed via contact A3-8 in the Audio-IN/OUT-Circuit Stage and CIC 1150-(16). The FM-Sound Signal is taken from CIC 1150-(23) and separated by the Band Pass Filter F 1097 (1.4 MHz-Left/1.8 MHz-Right). Subsequently, the signals are fed via CIC 1150-(8) or CIC 1150-(25) to the HF Limiter and to the Demodulator. The demodulated AF signal (L) leaves the CIC 1150 on Pin 6 and is fed via a voltage divider CR 1087/CR 1085 to the input of the "Hold-Circuit" CIC 1150-(1). This circuit suppresses the interferences in the AF signal caused by the Head changeover when scanning the signals from the tape. The AF signal is taken from CIC 1150-(5) and fed via an active Low Pass Filter CT 1060, the A/W switch IC 1055-(9), -(8) and the Level preset WPL (R 1055) to the IC 1050-(28). In IC 1050 the signal passes through an Expansion stage and the de-emphasis stages before it is taken via IC 1050-(24) and fed to the amplifier IC 885 in the Audio IN/OUT Circuit Stage.

**3. Noise Suppression on Record and Playback**

So that the full dynamic range can be recovered, during record the signals are Compressed and on playback the AF signal is Expanded. For this, the IC 1050 contains two control circuits.

**4. HiFi-Sound-Identification**

The 1.4 MHz component of the "FM from Tape" is fed from Filter F 1097 via CIC 1150-(8) for normal sound signal processing and also to an evaluation circuit which converts the FM-Envelope into a DC Voltage. This DC voltage is proportional to the FM Amplitude and forms the Actual value for the Sequence Computer B, which receives this value via A3-9 (Audio IN/OUT) and IC 190-(18). If this level is above 1.7V, the HiFi Sound Recording is played back. If this level is below 1.5 V the Sequence Computer B (IC 190) switches over to the Standard-Sound path. Additionally, this Actual value is processed by an A/D in the Sequence Computer (IC 190) and used as the control amplitude U/FMKT for Tracking indication.

**5. Muting Circuit**

Two Muting Circuits (CT 1084/CT 1129) are provided so that during Dropouts on playback the AF signals (L/R) applied to CIC 1150-(1) or CIC 1150-(32) are switched off for the duration of the Dropout. These Transistors are controlled by CIC 1150-(11), depending upon the Dropouts in FM Signal from Tape, with a High Level.

tegrato, il segnale BF percorre un limitatore di deviazione, lo stadio VCO, un passabasso ed è disponibile in CIC 1150-(3) come segnale FM a 1,4 MHz. Tale segnale viene aggiunto al segnale FM 1,8 MHz del canale destro proveniente da CIC 1150-(30) nel regolatore per la corrente di registrazione R 1118. Infine esso viene applicato all'amplificatore delle testine attraverso il contatto KT1-4 del connettore. Se entrambi le frequenze protanti vengono registrate sul nastro, l'ampiezza AF della portante a 1,8MHz risulta superiore di 10 dB circa, poichè questa portante viene cancellata maggiormente dalla testina video successiva. Grazie a ciò, in riproduzione le due portanti AF hanno all'incirca la stessa ampiezza.

**2. Riproduzione**

Il segnale proveniente dal nastro viene inviato prima al modulo audio stereo mediante KT 1-2, -3 e poi al CIC 1150 -(19), -(21). La commutazione delle testine avviene nel µC del mod. comando funzioni A tramite l'impulso HI-audio, che viene condotto attraverso il contatto A3-8 al modulo audio IN/OUT ed al CIC 1150-(10). Al CIC 1150-(23) viene prelevato il segnale audio FM e separato dal filtro passabanda F1097 (1,4MHz canale sinistro, 1,8MHz canale destro). Infine i segnali vengono fatti pervenire ai limitatori AF ed ai demodulatori per mezzo di CIC 1150-(8) risp. te (25). Il segnale BF demodulato (L) appare in uscita al pin 6 di CIC 1150 ed attraverso un partitore di tensione CR 1087/CR 1085 giunge all'ingresso del "circuito di tenuta" CIC 1150-(1). Esso serve a sopprimere i disturbi nel segnale BF che sono causati dalla commutazione delle testine durante il tempo di campionamento del segnale. Da CIC 1150-(5) il segnale BF giunge al passabasso attivo CT 1060, al commutatore R/A IC 1055-(9), -(8), al regolatore di livello WPL (R 1055) e quindi ad IC 1050-(28). Nell'integrato, esso attraversa un espansore e gli stadi di deenfasi, quindi viene disaccoppiato da IC 1050-(24) ed arriva all'amplificatore, IC 885, nel modulo audio IN/OUT.

**3. Soppressione del rumore in registrazione e riproduzione**

Per ottenere la massima dinamica, in registrazione ha luogo una compressione ed in riproduzione una espansione del segnale BF. L'integrato IC 1050 comprende quindi due circuiti di regolazione.

**4. Identificazione audio HiFi**

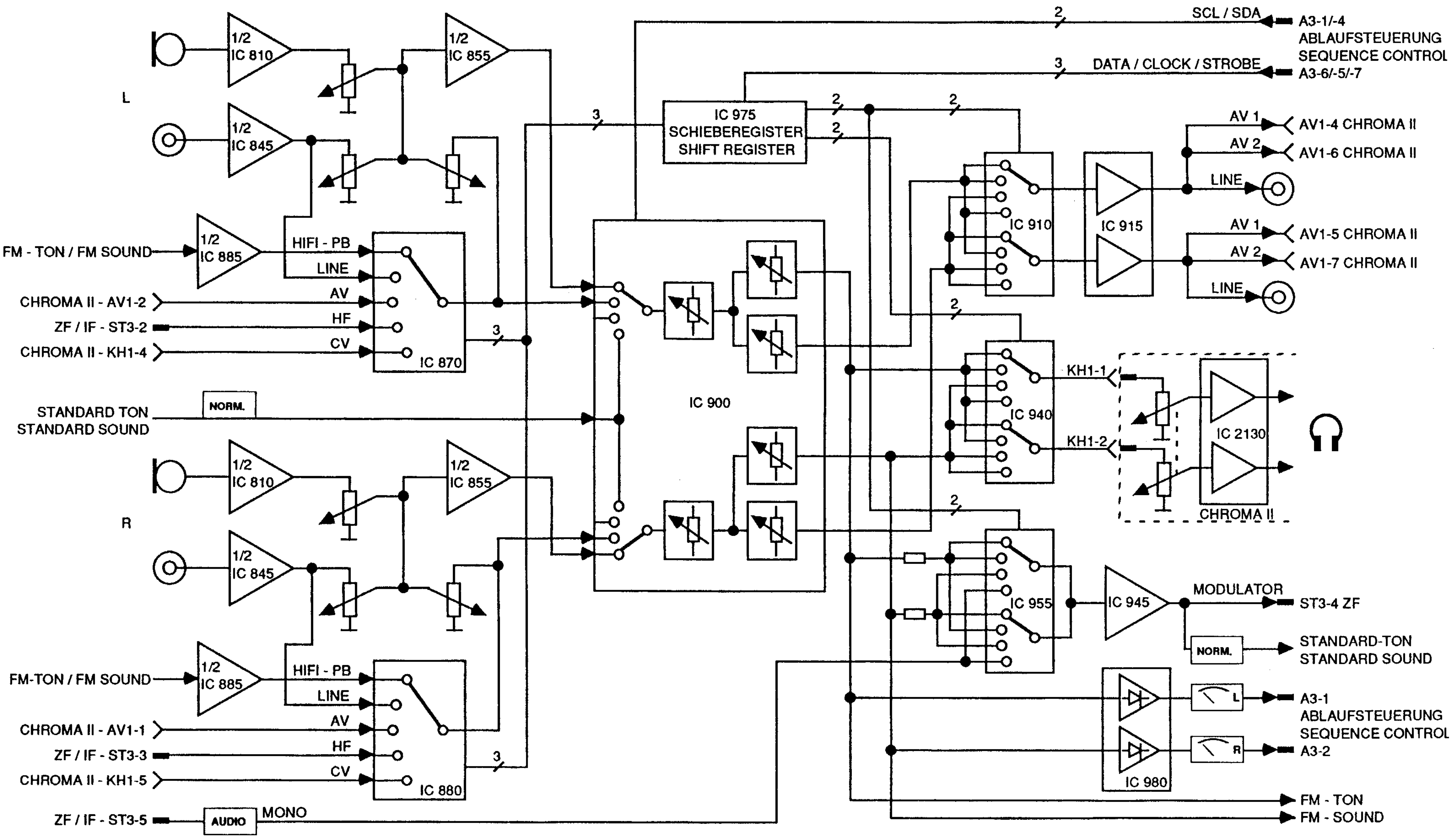
La parte a 1,4 MHz del "segnale FM dal nastro" ottenuta dal filtro 1097, attraverso CIC 1150-(8) giunge, tranne che nella normale elaborazione del segnale audio, anche ad un circuito di valutazione, dove l'inviluppo FM viene convertito in una tensione continua. Questa tensione continua è proporzionale all'ampiezza FM. Mediante A3-9 (Audio IN/OUT) ed IC 190-(18) essa viene fornita al µC del modulo comando funzioni B come valore effettivo. Con livello superiore ad 1,7V, è l'audio HiFi ad essere riprodotto. Se tale livello è invece inferiore a 1,5V, il µC del modulo comando funzioni B (IC 190) commuta su audio standard

Inoltre il valore effettivo viene utilizzato anche come livello di regolaz. U/FMKT per l'indicazione di tracking per mezzo di un convertitore A/D nel modulo comando funzioni (IC 190).

**5. Circuito di regolazione**

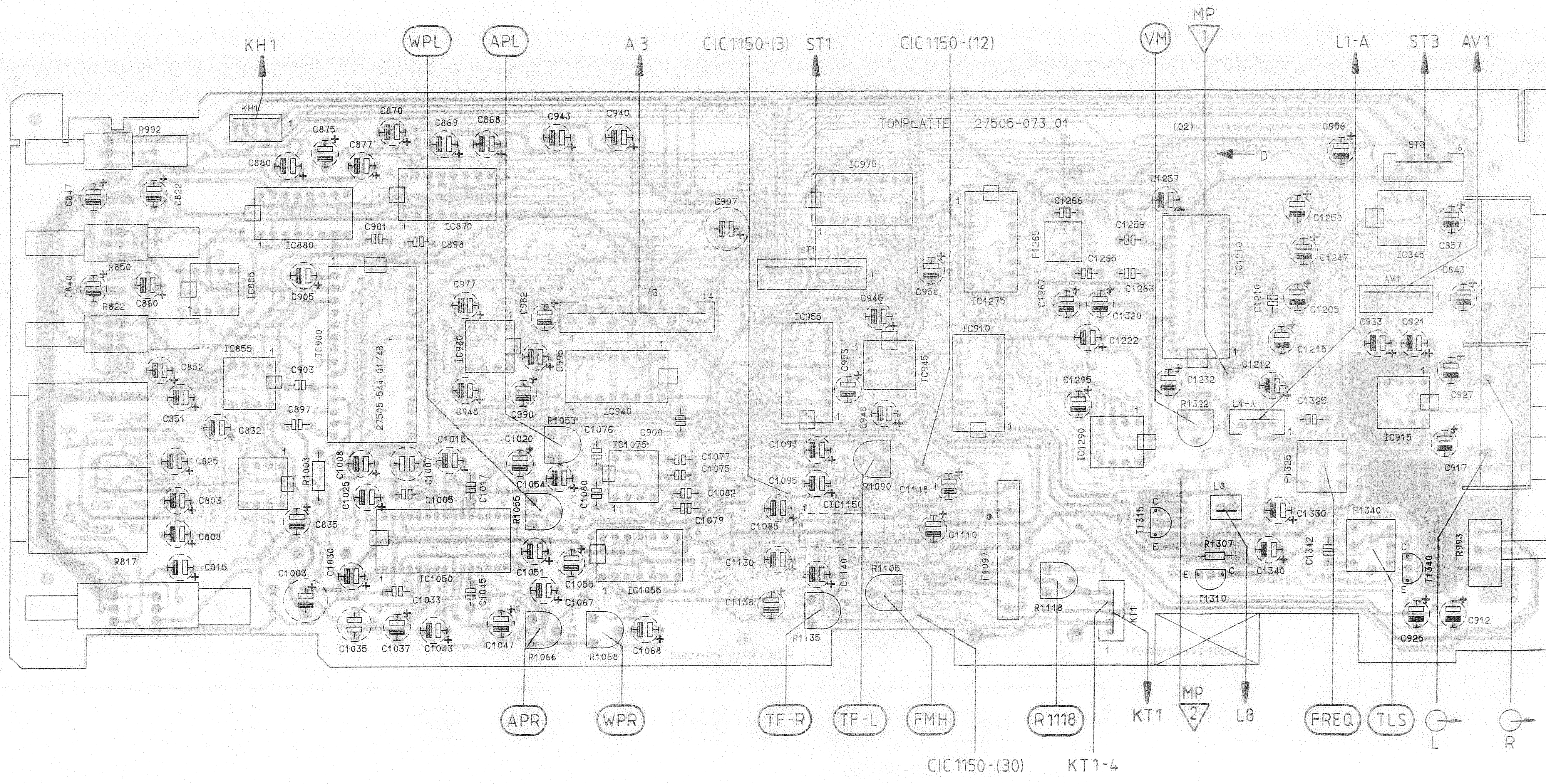
Due circuiti Muting (CT 1084/CT 1129) provvedono affinchè durante un dropout in riproduzione i segnali BF (L/R) collegati ai pin 1 e 32 di CIC 1150 vengano disinseriti per la durata del dropout stesso. Questi transistor vengono comandati da CIC 1150-(11) che indipendentemente dal dropout nel segnale FM dal nastro fornisse un segnale High.

# Blockschaltplan - Audio In / Out
# Block circuit diagram - Audio IN / OUT
# Schema elettrico a blocci - Audio IN / OUT

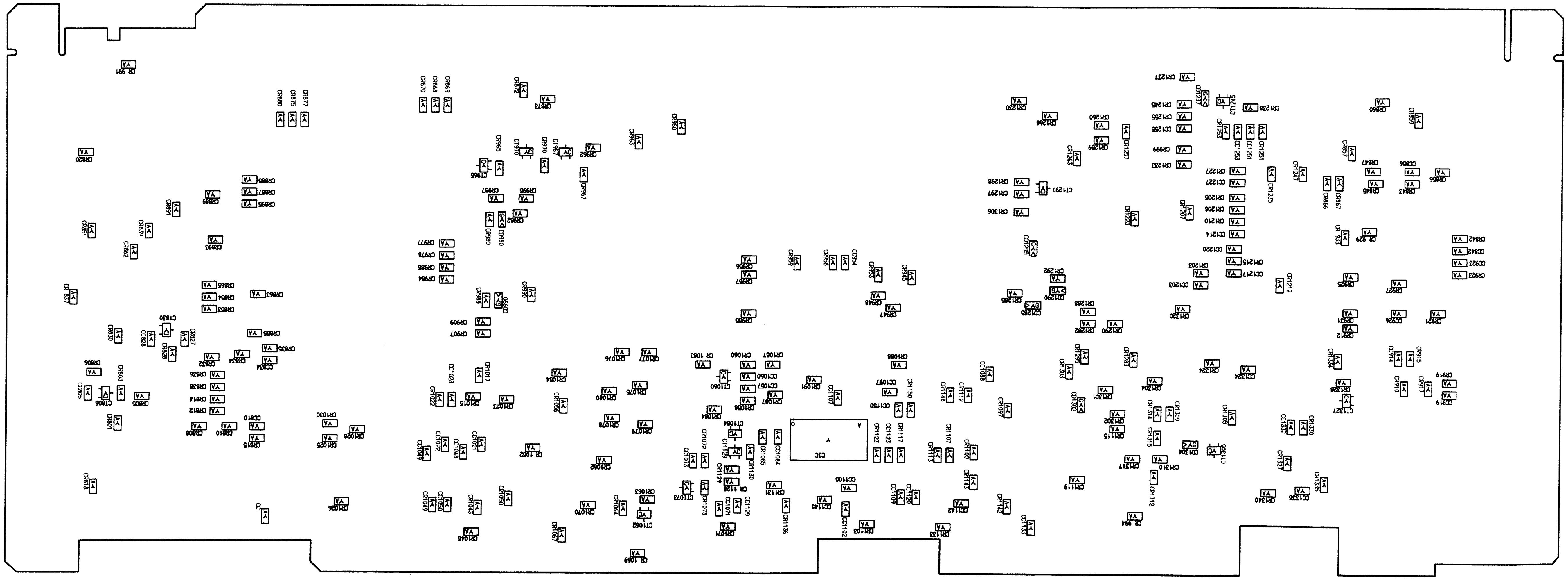

L
1/2 IC 810
1/2 IC 855
1/2 IC 845
1/2 IC 885
FM - TON / FM SOUND
HIFI - PB
LINE
AV
HF
CV
CHROMA II - AV1-2
ZF / IF - ST3-2
CHROMA II - KH1-4
IC 870
3
STANDARD TON
STANDARD SOUND
NORM.
R
1/2 IC 810
1/2 IC 855
1/2 IC 845
1/2 IC 885
FM-TON / FM SOUND
HIFI - PB
LINE
AV
HF
CV
CHROMA II - AV1-1
ZF / IF - ST3-3
CHROMA II - KH1-5
IC 880
3
ZF / IF - ST3-5
AUDIO
MONO
3
IC 975
SCHIEBEREGISTER
SHIFT REGISTER
IC 900
2
SCL / SDA
A3-1/-4
ABLAUFSTEUERUNG
SEQUENCE CONTROL
3
DATA / CLOCK / STROBE
A3-6/-5/-7
2
2
2
IC 910
IC 915
AV 1
AV1-4 CHROMA II
AV 2
AV1-6 CHROMA II
LINE
AV 1
AV1-5 CHROMA II
AV 2
AV1-7 CHROMA II
LINE
2
IC 940
KH1-1
KH1-2
IC 2130
CHROMA II
2
IC 955
IC 945
MODULATOR
ST3-4 ZF
NORM.
STANDARD-TON
STANDARD SOUND
IC 980
L
R
A3-1
ABLAUFSTEUERUNG
SEQUENCE CONTROL
A3-2
FM - TON
FM - SOUND

## Tonbaustein / Sound module / Modulo audio

A 3 - Chassisplatte I / Chassis Board I / Piastra telaio I
AV 1 - Chroma / Croma
KH 1 - Chroma / Croma
KT 1 - Kopfverstärker / Head amplifier / Amplificatore testina
L 1-A - Laufwerk / Drive Mechanism / Meccanica
L 8 - Laufwerk / Drive Mechanism / Meccanica
ST 1 - Chroma / Croma
ST 3 - ZF-Verstärker / IF Amplifier / Amplificatore FI


KH1
WPL
APL
A 3
CIC1150-(3)
ST1
CIC1150-(12)
VM
MP 1
L1-A
ST3
AV1
TONPLATTE 27505-073.01
APR
WPR
TF-R
TF-L
FMH
R1118
KT1
MP 2
L8
FREQ
TLS
L
R
CIC1150-(30)
KT1-4

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



## Ⓓ Abgleich (Standard-Ton)

**Meßgeräte :**
Oszilloskop, Tastkopf (TK) 10:1, Frequenzzähler, NF-Millivoltmeter, Tongenerator, Videocassette Type BASF E 180 Chromdioxid Super HG

**Servicearbeiten nach Bausteinwechsel:** Abgleich Nr. 1...4 (Standard-Ton), Abgleich Nr. 1...5 (HiFi-Ton)

## GB Adjustment (Standard Sound)

**Test equipment:**
Oscilloscope, 10:1 test probe (TK), Frequency Counter, AF Millivoltmeter, AF Generator, Videocassette Type BASF E 180 Chrome Dioxid Super HG

**Service work after changing board:** Adjustment no. 1...4 (Standard sound), adjustment no. 1...5 (HiFi sound)

## Ⓘ Taratura (Audio Standard)

**Strumenti :**
Oscilloscopio, sonda 10:1 (TK), frequenzimetro, millivoltmetro BF, generatore audio, videocassetta tipo BASF E 180 al biossido di cromo Super HG

**Lavori da eseguire dopo la sostituzione del modulo:** Tarature no. 1...4 ( audio standard), tarature no. 1...5 (audio HiFi)

| Ⓓ Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. Tonlöschfrequenz | Frequenzzähler:<br>TK 10 : 1: MP ▽1 | Aufnahme | F 1325 (FREQ) | Frequenz von 62,5 kHz ± 2,5 kHz einstellen. |
| 2. Tonlöschkopfspannung | Millivoltmeter,<br>TK 10:1: MP ▽2 | Aufnahme | F 1340 (TLS) | VHS: Spannung auf 2,5V ± 0,5V einstellen (S-VHS: 3V ± 0,5V). |
| 3. Vormagnetisierung (VM) | Oszilloskop,<br>TK 10:1: MP ▽1 | Aufnahme | R 1322 (VM) | * Spannung zwischen 18 und $73V_{ss}$ solange verändern, bis der Frequenzgang linear ist. |
| 4. Wiedergabepegel | Tongenerator:<br>Audio ⊖<br>333Hz / $0,5V_{eff}$ einspeisen.<br>NF-Millivoltmeter:<br>Audio ⊖ | HiFi-EE-Betrieb<br>Autom. Aufnahme<br>(Normalplay) | | |
| | | Wiedergabe dieser Aufnahme | | - Pausetaste drücken<br>- Servicefunktion eingeben (4 9 3 4 + OK). Im Display erscheint "0".<br>- Taste "9" am Gerät drücken. Im Display erscheint "A9". Ist der automatische Abgleich beendet, erscheint "0" im Display.<br>- Taste ⏻ 2x drücken.<br>Sollte nach dem Abgleich die Vollaussteuerung um mehr als ± 1 dB abweichen, liegt ein Fehler im Standard-Ton-Schaltungszweig vor. |

| GB Adjustment | Preparation | Operating mode Cassette | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. Sound Erase Frequency | Frequency counter,<br>TK 10:1: MP ▽1 | Record | F 1325 (FREQ) | Set frequency to 62.5 kHz ± 2.5 kHz. |
| 2. Sound Erase Head Voltage | Millivoltmeter,<br>TK 10:1: MP ▽2 | Record | F 1340 (TLS) | VHS: Set voltage to 2,5V ± 0.5V (S-VHS: 3V ± 0.5). |
| 3. Bias (VM) | Oscilloscope,<br>TK 10:1: MP ▽1 | Record | R 1322 (VM) | * Alter the voltage between 18 and $73V_{pp}$ and set when the frequency response is linear. |
| 4. Playback level | AF generator<br>Audio ⊖<br>Feed in 333Hz/ $0.5V_{RMS}$<br>AF Millivoltmeter:<br>Audio ⊖ | HiFi -EE-Mode<br>Auto. Recording<br>(Normal play) | | |
| | | Playback this Recording | | - Press Pause Button<br>- Feed in the Service Function Code (4 9 3 4 + OK). In the Display "0" is indicated.<br>- Press Button "9" on the machine. On the Display "A9" is indicated. When the automatic adjustment has been completed, "0" is indicated in the Display.<br>- Press the Button ⏻ twice.<br>If, after this adjustment, the Full Level Drive differs by more than ± 1dB, a fault is present in the Standard Sound stage path. |

| Ⓘ Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Frequenza cancell. audio | Frequenzimetro, TK 10:1: pun. mis. ▽1 | Registrazione | F 1325 (FREQ) | Regolare la frequenza 62,5 kHz ± 2,5 kHz. |
| 2. Tensione test. cancell. audio | Millivoltmetro, TK 10:1: pun. mis. ▽2 | Registrazione | F 1340 (TLS) | VHS: regolare la tensione a 2,5V ± 0,5V (S-VHS: 3V ± 0,5V). |
| 3. Premagnetizzazione (VM) | Oscilloscopio, TK 10:1: pun. mis. ▽1 | Registrazione | R 1322 (VM) | * Regolare la tensione tra $18V_{pp}$ e $73V_{pp}$ finchè la risposta in frequenza è lineare. |
| 4. Livello di riproduzione | Generatore audio:<br>Audio ⊖<br>Applicare 333Hz/ $0,5V_{eff}$<br>Millivoltmetro BF:<br>Audio ⊖ | Funzionam. EE HiFi, Registraz. automatica (funz. normale) | | |
| | | Riproduzione di questa registrazione | | - Premere il tasto di pausa.<br>- Immettere la funzione di servizio (4 9 3 4 + OK). Nel display appare "0".<br>- Premere il tasto "9" dell´apparecchio. Terminata la taratura automatica, appare "0" nel display.<br>- Premere due il tasto ⏻ .<br>Se dopo la taratura, a pilotaggio pieno si riscontra uno scostamento superiore a ± 1dB, è presente un difetto nel modulo audio standard. |

### * Frequenzgangprüfung

- FBAS-Signal an EURO-AV-Buchse, Kontakt 20.
- Audio-Signal 10 $mV_{eff}$ ($28mV_{ss}$) vom Tongenerator an EURO-AV-Buchse Kontakt 2/6 einspeisen.
- AV-Aufnahme mit jeweils ca. 1 Minute 400 Hz- und 8 kHz-Ton durchführen.
- Diese Aufnahme wiedergeben.
- NF-Millivoltmeter (Oszilloskop) an EURO-AV-Buchse Kontakt 1 / 3 oder Audio ⊖.
- Das Spannungsverhältnis von 400 Hz zu 8 kHz darf nicht größer als 1:0,7 bzw. 0,7:1 sein (± 3 dB). Überschreitet das Spannungsverhältnis diese Grenzen, ist die Vormagnetisierung zu verändern:
  Wiedergabespannung bei 8 kHz vergrößern: "VM" verringern.
  Wiedergabespannung bei 8 kHz verkleinern: "VM" erhöhen.

### * Checking frequency response

- Feed a CCVS signal to the EURO AV socket, contact 20.
- Feed an audio signal of $10mV_{rms}$ ($28mV_{pp}$ ) from the AF Generator to the EURO AV socket, pins 2 / 6.
- Make an AV recording at 400 Hz and 8 kHz, at least 1 min duration, of each frequency.
- Playback the recordings.
- Connect an AF millivoltmeter (oscilloscope) to EURO AV socket pins 1 / 3 or Audio ⊖.
- The voltage ratio of 400 Hz to 8 kHz must not be greater than 1 : 0.7 or 0.7 : 1 (± 3dB). If the voltage ratio exceeds these limits, the bias must be altered:
  To increase the playback voltage of 8 kHz: Reduce bias (VM).
  To reduce the playback voltage of 8 kHz: Increase bias (VM).

### * Controllo della risposta in frequenza

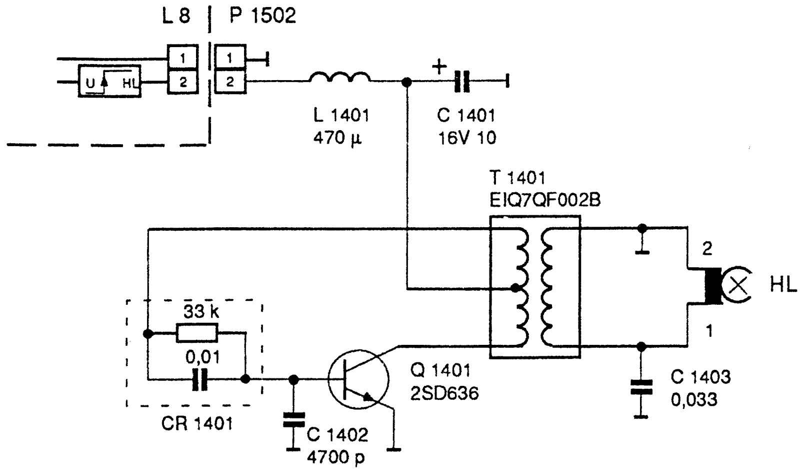
- Segnale FBAS alla presa Scart,contatto 20.
- Segnale audio 10 $mV_{eff}$ ($28mV_{pp}$) dal generatore audio alla presa Scart,contatti 2/6.
- Effentuare una registrazione AV con 1 minuto circa di audio a 400 Hz e 8 kHz.
- Riprodurre la registrazione.
- Millivoltmetro BF (oppure oscilloscopio) alla presa Scart,contatto 1 / 3 o Audio ⊖.
- Il rapporto di tensione tra 400 Hz e 8 kHz non deve essere superiore a 1 : 0,7 risp. te 0,7 :1 (± 3 dB). Se la differenza è maggiore, variare la premagnetizzazione:
  aumentare la tensione di riproduzione a 8 kHz riducendo "VM".
  ridurre la tensione di riproduzione a 8 kHz aumentando "VM".

## Löschoszillator

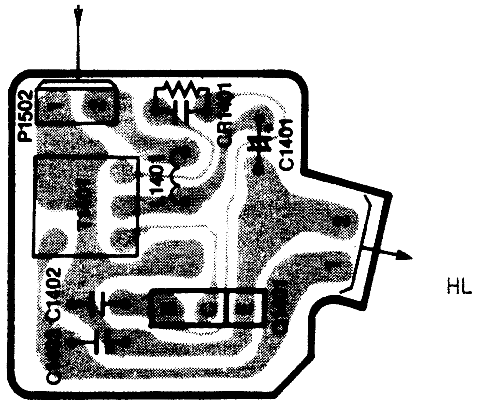
## Erase oscillator

## Oscillatore cancellazione

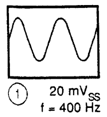
Standard-Ton
Standard Sound
Audio Standard

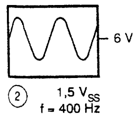


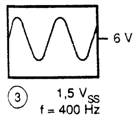
Standard-Ton
Standard Sound
Audio Standard

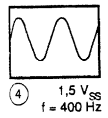


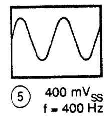
# Aufnahme
# Record
# Registrazione

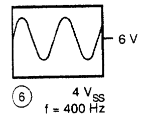


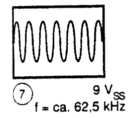


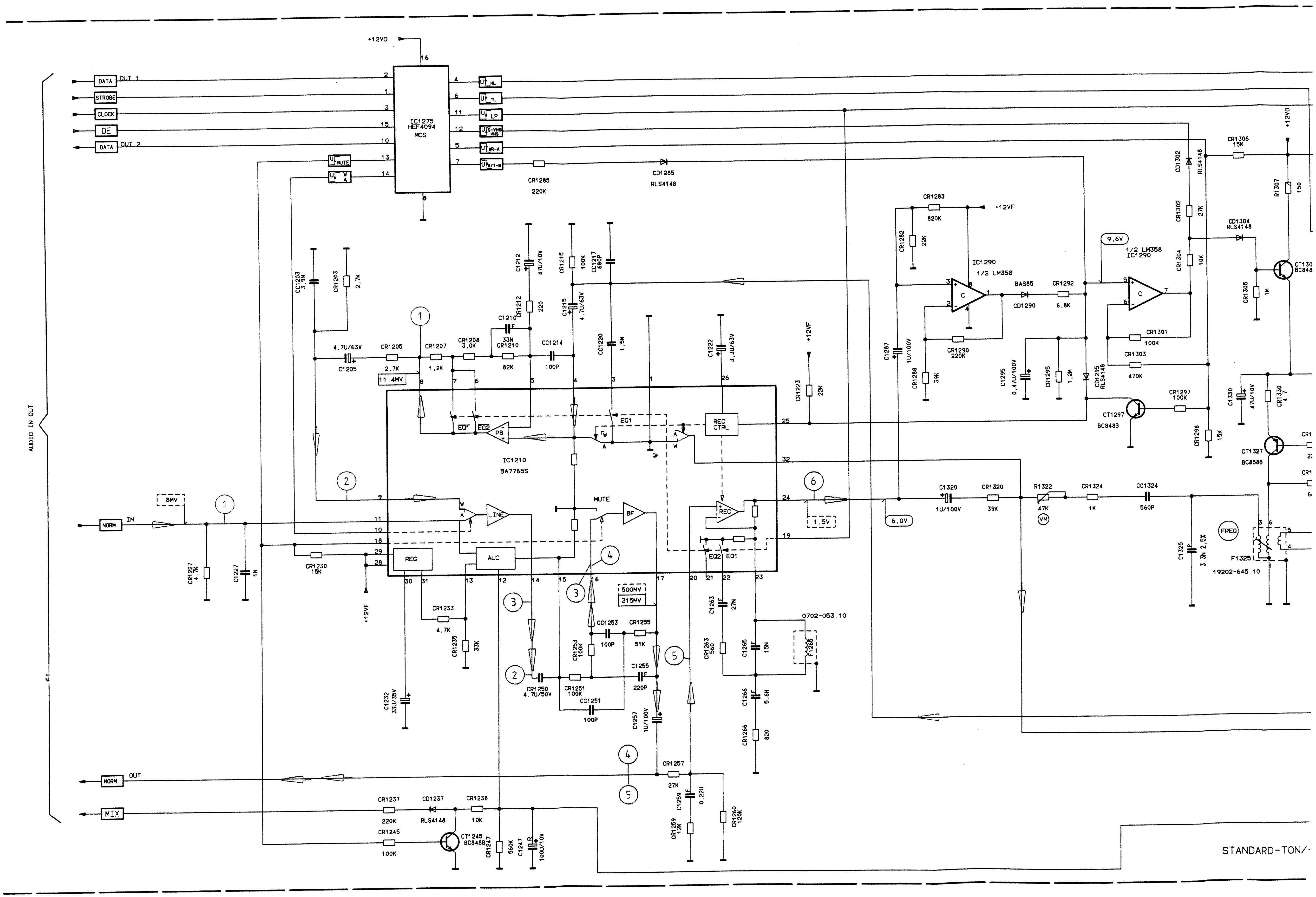






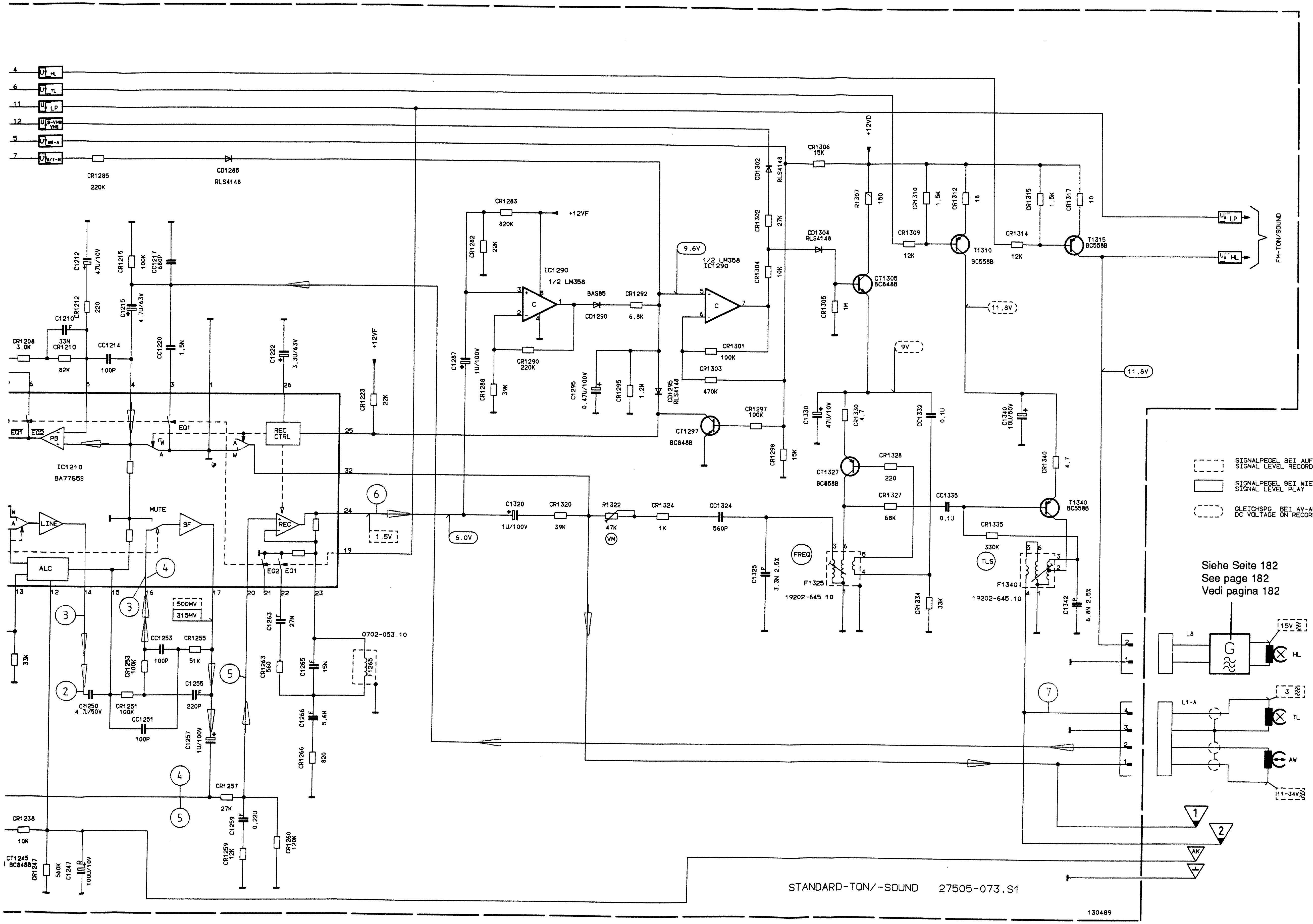


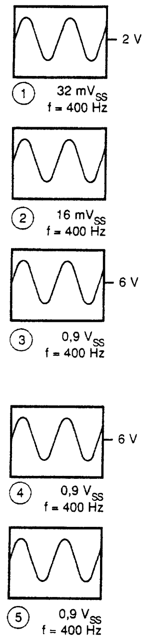




+12VD
IC1275
HEF4094
MOS
DATA
OUT 1
STROBE
CLOCK
OE
DATA
OUT 2
MUTE
CR1285
220K
CD1285
RLS4148
AUDIO IN OUT
NORM
IN
8MV
CR1227
4,7K
C1227
1N
CC1203
3,9N
CR1203
2,7K
4,7U/63V
C1205
CR1205
2,7K
11 4MV
CR1207
1,2K
CR1208
3,0K
C1210
33N
CR1210
82K
C1212
47U/10V
CR1212
220
CC1214
100P
CR1215
100K
C1215
4,7U/63V
CC1217
680P
CC1220
1,5N
C1222
3,3U/63V
CR1223
22K
+12VF
IC1210
BA7765S
PB
EQ1
EQ2
REC CTRL
LINE
MUTE
BF
REC
REG
ALC
CR1230
15K
+12VF
C1232
33U/35V
CR1233
4,7K
CR1235
33K
500MV
315MV
CC1253
100P
CR1253
100K
CR1255
51K
C1255
220P
CR1250
4,7U/50V
CR1251
100K
CC1251
100P
C1257
1U/100V
CR1257
27K
C1259
0,22U
CR1259
12K
CR1260
120K
C1263
27N
CR1263
560
C1265
15N
0702-053.10
F1265
C1266
5,6N
CR1266
820
1,5V
NORM
OUT
MIX
CR1237
220K
CD1237
RLS4148
CR1238
10K
CR1245
100K
CT1245
BC848B
CR1247
560K
C1247
100U/10V
CR1283
820K
+12VF
CR1282
22K
IC1290
1/2 LM358
BAS85
CD1290
CR1292
6,8K
CR1290
220K
C1287
1U/100V
CR1288
39K
C1295
0,47U/100V
CR1295
1,2M
CD1295
RLS4148
9,6V
1/2 LM358
IC1290
CR1301
100K
CR1303
470K
CR1297
100K
CT1297
BC848B
6,0V
C1320
1U/100V
CR1320
39K
R1322
47K
VM
CR1324
1K
CC1324
560P
FREQ
C1325
3,3N 2,5%
F1325
19202-645 10
CD1302
RLS4148
CR1302
27K
CR1304
10K
CR1305
1M
CR1298
15K
CR1306
15K
+12VD
R1307
150
CD1304
RLS4148
CT130
BC848
C1330
47U/10V
CR1330
4,7
CT1327
BC858B
STANDARD-TON/-

Wiedergabe
Playback
Riproduzione


U HL
U TL
U LP
U S-VHS VHS
U MR-A
U W/T-H
CR1285 220K
CD1285 RLS4148
CR1283 820K
+12VF
CR1282 22K
IC1290 1/2 LM358
1/2 LM358 IC1290
BAS85 CD1290
CR1292 6,8K
CR1290 220K
CR1288 39K
C1287 1U/100V
C1295 0,47U/100V
CR1295 1,2M
CD1295 RLS4148
CR1301 100K
CR1303 470K
CT1297 BC848B
CR1297 100K
CR1298 15K
9,6V
CD1302 RLS4148
CR1302 27K
CR1304 10K
CD1304 RLS4148
CR1305 1M
CR1306 15K
+12VD
R1307 150
CR1310 1,5K
CR1312 18
CR1309 12K
T1310 BC558B
CR1315 1,5K
CR1317 10
CR1314 12K
T1315 BC558B
CT1305 BC848B
11,8V
9V
C1330 47U/10V
CR1330 4,7
CC1332 0,1U
CT1327 BC858B
CR1328 220
CR1327 68K
CC1335 0,1U
CR1335 330K
T1340 BC558B
CR1340 4,7
C1340 10U/50V
FM-TON/SOUND
C1212 47U/10V
CR1212 220
C1210 33N
CR1208 3,0K
CR1210 82K
CC1214 100P
C1215 100K
C1215 4,7U/63V
CC1217 680P
CC1220 1,5N
C1222 3,3U/63V
CR1223 22K
IC1210 BA7765S
EQ1 EQ2 PB REC CTRL LINE MUTE BF ALC REC
6,0V
1,5V
C1320 1U/100V
CR1320 39K
R1322 47K VM
CR1324 1K
CC1324 560P
C1325 3,3N 2,5%
FREQ
F1325 19202-645 10
CR1334 33K
TLS
F1340 19202-645 10
C1342 6,8N 2,5%
500MV
315MV
CC1253 100P
CR1255 51K
CR1253 100K
C1250 4,7U/50V
CR1251 100K
CC1251 100P
C1255 220P
C1257 1U/100V
C1263 27N
CR1263 560
C1265 15N
0702-053.10
F1265
C1266 5,6N
CR1266 820
CR1257 27K
C1259 0,22U
CR1259 12K
CR1260 120K
CR1238 10K
CT1245 BC848B
CR1247 560K
C1247 100U/10V
33K
L8
G
HL
L1-A
TL
AW
15V
3
±0,5V
11-34V
AK
SIGNALPEGEL BEI AUFN F=315HZ S-VHS-NORMALPLAY/ SIGNAL LEVEL RECORD
SIGNALPEGEL BEI WIEDERGF=315HZ/ SIGNAL LEVEL PLAY
GLEICHSPG. BEI AV-AUFN. OHNE SIGNAL/ DC VOLTAGE ON RECORD AV WITH OUT SIGNAL
Siehe Seite 182
See page 182
Vedi pagina 182
STANDARD-TON/-SOUND 27505-073.S1
130489



## Standard-Ton
## Standard Sound
## Audio standard

Aufnahme
Record
Registrazione

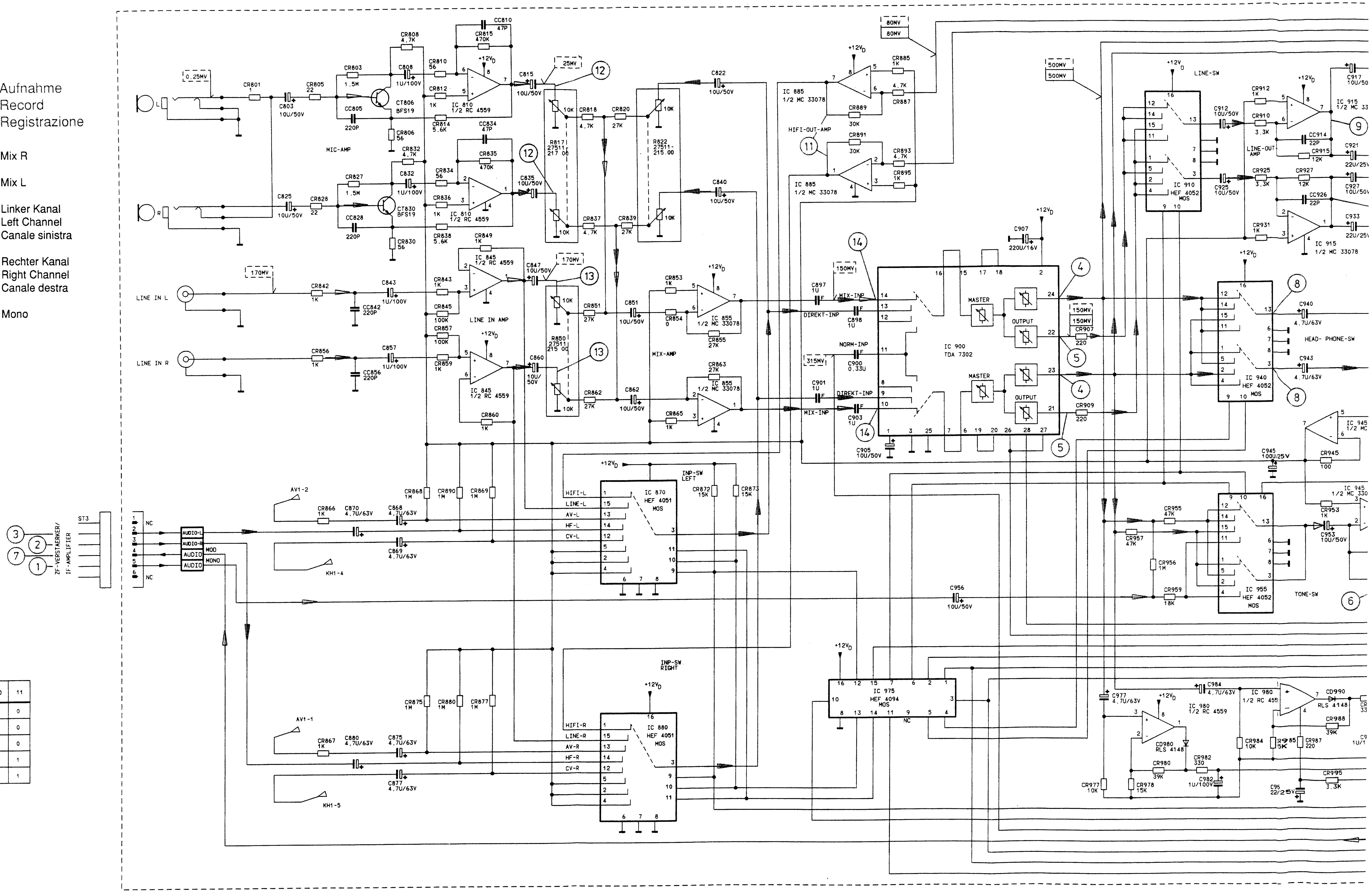
⇾ Mix R

▷ Mix L

▶ Linker Kanal
Left Channel
Canale sinistra

➞ Rechter Kanal
Right Channel
Canale destra

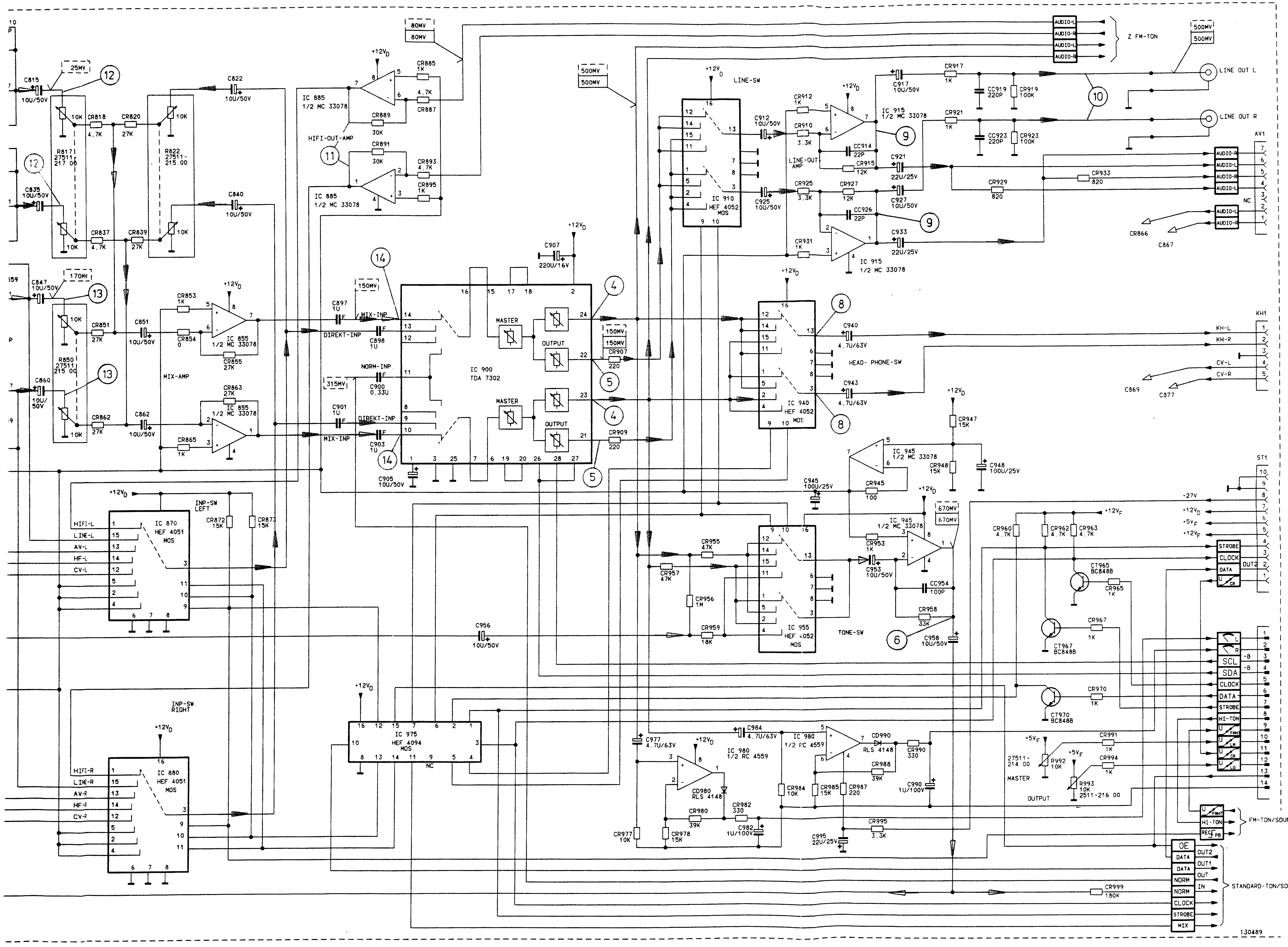
⇨ Mono


0.25MV
CR801 1
C803 10U/50V
CR805 22
CR803 1.5M
CC805 220P
CT806 BFS19
CR806 56
CR808 4.7K
C808 1U/100V
CR810 56
CR812 1K
CR814 5.6K
CR815 470K
CC810 47P
IC 810 1/2 RC 4559
+12V_D
C815 10U/50V
25MV
MIC-AMP
C825 10U/50V
CR828 22
CR827 1.5M
CC828 220P
CT830 BFS19
CR830 56
CR832 4.7K
C832 1U/100V
CR834 56
CR836 1K
CR838 5.6K
CR835 470K
CC834 47P
C835 10U/50V
R817 27511-217 00
R822 27511-215 00
CR818 4.7K
CR820 27K
CR837 4.7K
CR839 27K
10K
C822 10U/50V
C840 10U/50V
170MV
LINE IN L
LINE IN R
CR842 1K
CC842 220P
C843 1U/100V
CR856 1K
CC856 220P
C857 1U/100V
CR843 1K
CR845 100K
CR849 1K
IC 845 1/2 RC 4559
C847 10U/50V
LINE IN AMP
CR857 100K
CR859 1K
CR860 1K
C860 10U/50V
R850 27511-215 00
CR851 27K
C851 10U/50V
CR853 1K
CR854 0
IC 855 1/2 MC 33078
CR855 27K
MIX-AMP
CR862 27K
C862 10U/50V
CR863 27K
CR865 1K
80MV
IC 885 1/2 MC 33078
CR885 1K
4.7K
CR887
CR889 30K
HIFI-OUT-AMP
CR891 30K
CR893 4.7K
CR895 1K
C907 220U/16V
150MV
C897 1U
MIX-INP
DIREKT-INP
C898 1U
NORM-INP
315MV
C900 0.33U
C901 1U
C903 1U
C905 10U/50V
IC 900 TDA 7302
MASTER
OUTPUT
CR907 220
CR909 220
500MV
LINE-SW
IC 910 HEF 4052 MOS
C912 10U/50V
CR912 1K
CR910 3.3K
CC914 22P
CR915 12K
LINE-OUT AMP
IC 915 1/2 MC 33078
C917 10U/50
C921 22U/25V
C925 10U/50V
CR925 3.3K
CR927 12K
C927 10U/50V
CC926 22P
CR931 1K
C933 22U/25V
C940 4.7U/63V
HEAD- PHONE-SW
C943 4.7U/63V
IC 940 HEF 4052 MOS
IC 945 1/2 MC 330
C945 100U/25V
CR945 100
CR953 1K
C953 10U/50V
CR955 47K
CR957 47K
CR956 1M
CR959 18K
IC 955 HEF 4052 MOS
TONE-SW
C956 10U/50V
AV1-2
CR866 1K
C870 4.7U/63V
C868 4.7U/63V
C869 4.7U/63V
CR868 1M
CR890 1M
CR869 1M
KH1-4
INP-SW LEFT
IC 870 HEF 4051 MOS
HIFI-L
LINE-L
AV-L
HF-L
CV-L
CR872 15K
CR873 15K
ST3
ZF-VERSTAERKER/ IF-AMPLIFIER
NC
AUDIO-L
AUDIO-R
AUDIO
AUDIO
MOD
MONO
AV1-1
CR867 1K
C880 4.7U/63V
C875 4.7U/63V
C877 4.7U/63V
CR875 1M
CR880 1M
CR877 1M
KH1-5
INP-SW RIGHT
IC 880 HEF 4051 MOS
HIFI-R
LINE-R
AV-R
HF-R
CV-R
IC 975 HEF 4094 MOS
C977 4.7U/63V
C984 4.7U/63V
IC 980 1/2 RC 4559
CD980 RLS 4148
CR980 39K
CR982 330
C982 1U/100V
CR977 10K
CR978 15K
CR984 10K
CR985 5K
CR987 220
CR988 39K
CD990 RLS 4148
CR995 3.3K
C95 22/25V

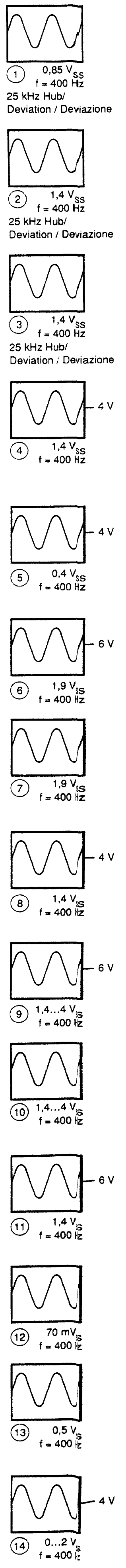
IC870, IC880

| FKT SOURCE \ PIN | 9 | 10 | 11 |
|---|---|---|---|
| HIFI(PIN1) | 1 | 0 | 0 |
| LINE(PIN15) | 0 | 1 | 0 |
| AV(PIN13) | 0 | 0 | 0 |
| HF(PIN14) | 0 | 0 | 1 |
| CV(PIN12) | 0 | 1 | 1 |

## Audio IN



Z FM-TON
AUDIO-L
AUDIO-R
80MV
500MV
25MV
170MV
150MV
315MV
670MV
C815 10U/50V
C835 10U/50V
C847 10U/50V
C860 10U/50V
C822 10U/50V
C840 10U/50V
R817 27511-217 00
R822 27511-215 00
R850 27511-215 00
CR818 4,7K
CR820 27K
CR837 4,7K
CR839 27K
CR851 27K
CR862 27K
C851 10U/50V
C862 10U/50V
MIX-AMP
IC 855 1/2 MC 33078
CR853 1K
CR854 0
CR855 27K
CR863 27K
CR865 1K
IC 885 1/2 MC 33078
HIFI-OUT-AMP
CR885 1K
CR887 4,7K
CR889 30K
CR891 30K
CR893 4,7K
CR895 1K
IC 900 TDA 7302
MIX-INP
DIREKT-INP
NORM-INP
MASTER
OUTPUT
C897 1U
C898 1U
C900 0,33U
C901 1U
C903 1U
C905 10U/50V
C907 220U/16V
CR907 220
CR909 220
LINE-SW
IC 910 HEF 4052 MOS
C912 10U/50V
C925 10U/50V
CR910 3,3K
CR912 1K
CR915 12K
CR925 3,3K
CR927 12K
CR931 1K
CC914 22P
CC926 22P
LINE-OUT-AMP
IC 915 1/2 MC 33078
C917 10U/50V
C921 22U/25V
C927 10U/50V
C933 22U/25V
CR917 1K
CR921 1K
CC919 220P
CR919 100K
CC923 220P
CR923 100K
CR929 820
CR933 820
LINE OUT L
LINE OUT R
AV1
NC
CR866
C867
CHROMA II
IC 940 HEF 4052 MOS
HEAD- PHONE-SW
C940 4,7U/63V
C943 4,7U/63V
KH1
KH-L
KH-R
CV-L
CV-R
C869
C877
IC 945 1/2 MC 33078
CR945 100
C945 100U/25V
CR947 15K
CR948 15K
C948 100U/25V
CR953 1K
C953 10U/50V
CC954 100P
CR958 33K
C958 10U/50V
IC 955 HEF 4052 MOS
TONE-SW
CR955 47K
CR956 1M
CR957 47K
CR959 18K
C956 10U/50V
ST1
-27V
+12V_D
+5V_F
+12V_F
STROBE
CLOCK
DATA
OUT2
CR960 4,7K
CR962 4,7K
CR963 4,7K
CT965 BC848B
CR965 1K
CR967 1K
CT967 BC848B
CR970 1K
CT970 BC848B
CHROMA III
A3
SCL
SDA
HI-TON
ABLAUFSTEUERUNG I/ SEQUENCE CONTROL
IC 870 HEF 4051 MOS
INP-SW LEFT
HIFI-L
LINE-L
AV-L
HF-L
CV-L
CR872 15K
CR873 15K
IC 880 HEF 4051 MOS
INP-SW RIGHT
HIFI-R
LINE-R
AV-R
HF-R
CV-R
IC 975 HEF 4094 MOS
NC
IC 980 1/2 RC 4559
C977 4,7U/63V
C984 4,7U/63V
CD980 RLS 4148
CD990 RLS 4148
CR977 10K
CR978 15K
CR980 39K
CR982 330
C982 1U/100V
CR984 10K
CR985 15K
CR987 220
CR988 39K
CR990 330
C990 1U/100V
C995 22U/25V
CR995 3,3K
CR991 1K
CR994 1K
27511-214 00
R992 10K
MASTER
R993 10K 2511-216 00
OUTPUT
FM-TON/SOUND
OE
OUT1
OUT
IN
NORM
MIX
STANDARD-TON/SOUND
CR999 180K
130489



① 0,85 V_SS f = 400 Hz 25 kHz Hub/ Deviation / Deviazione
② 1,4 V_SS f = 400 Hz 25 kHz Hub/ Deviation / Deviazione
③ 1,4 V_SS f = 400 Hz 25 kHz Hub/ Deviation / Deviazione
4 V
④ 1,4 V_SS f = 400 Hz
4 V
⑤ 0,4 V_SS f = 400 Hz
6 V
⑥ 1,9 V_SS f = 400 Hz
⑦ 1,9 V_SS f = 400 Hz
4 V
⑧ 1,4 V_S f = 400 Hz
6 V
⑨ 1,4...4 V_S f = 400 Hz
⑩ 1,4...4 V_S f = 400 Hz
6 V
⑪ 1,4 V_S f = 400 Hz
⑫ 70 mV_S f = 400 Hz
⑬ 0,5 V_S f = 400 Hz
4 V
⑭ 0...2 V_S f = 400 Hz

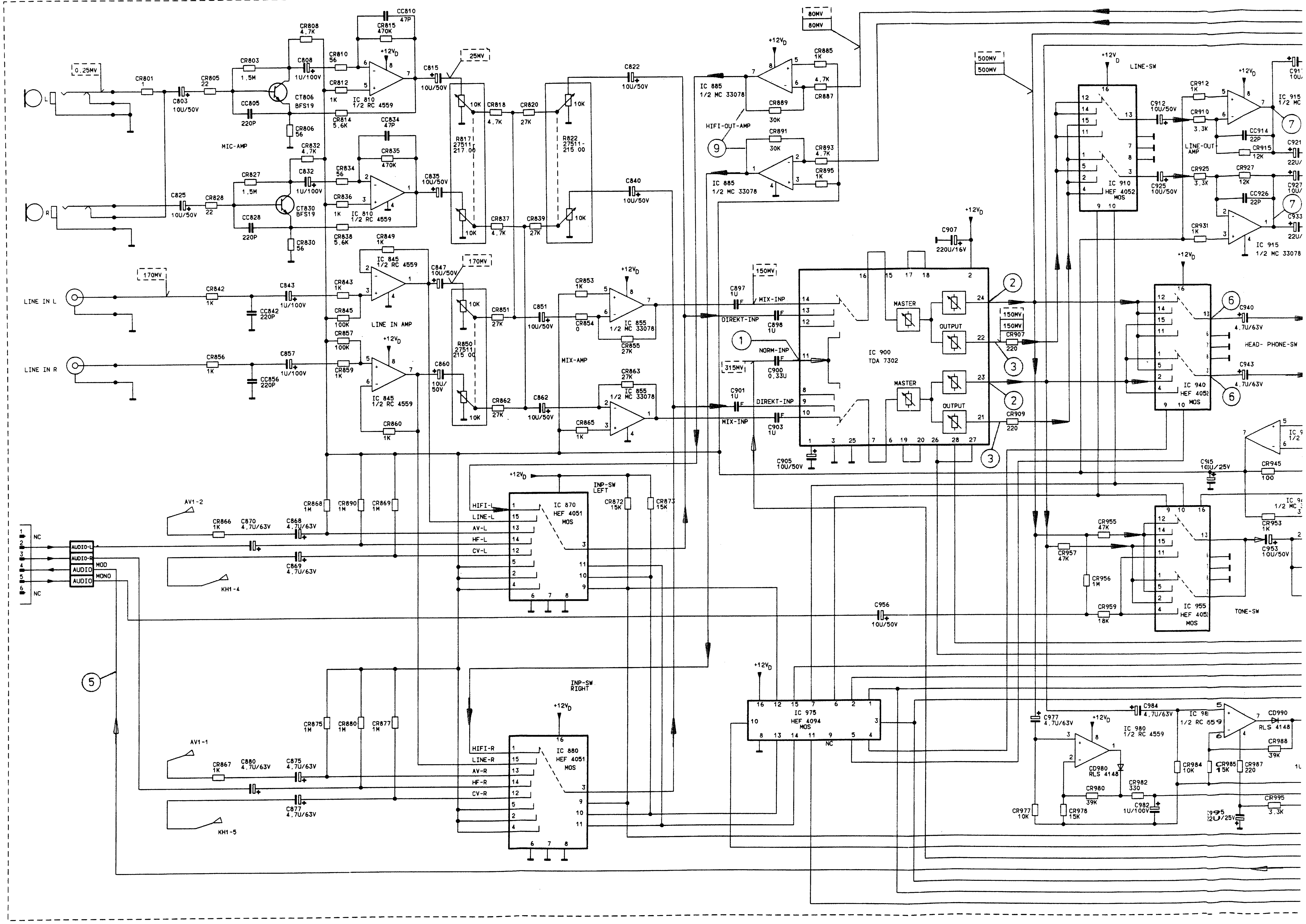
## Audio IN / OUT

Wiedergabe
Playback
Riproduzione

➡ Linker Kanal
Left Channel
Canale sinistra

→ Rechter Kanal
Right Channel
Canale destra

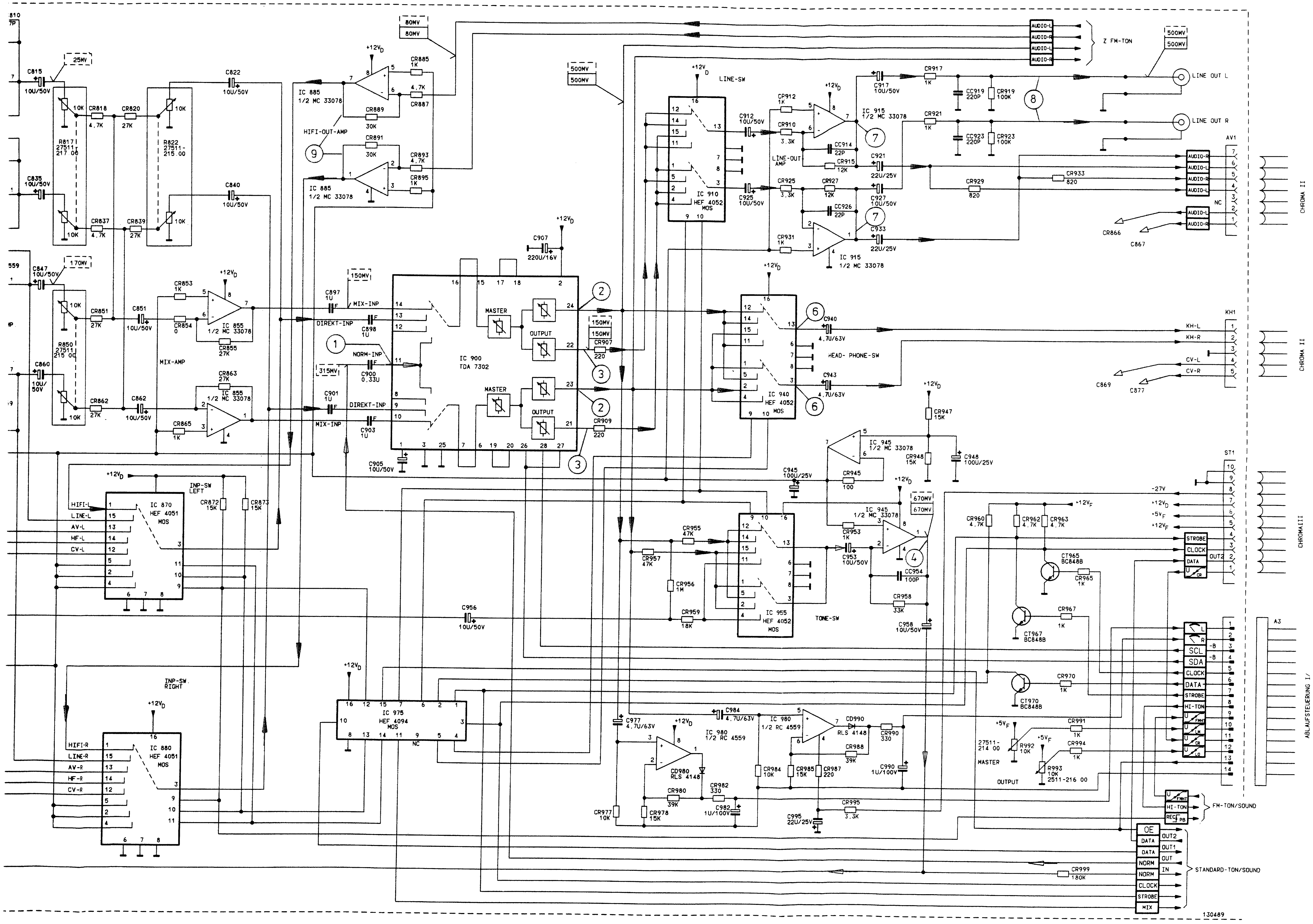
⇨ Mono

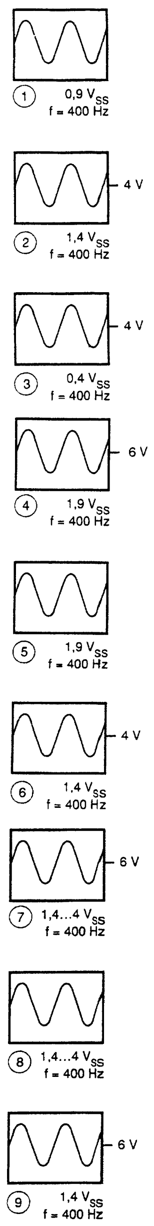


0.25MV
MIC-AMP
IC 810
1/2 RC 4559
BFS19
25MV
170MV
LINE IN L
LINE IN R
LINE IN AMP
IC 845
1/2 RC 4559
MIX-AMP
IC 855
1/2 MC 33078
IC 885
1/2 MC 33078
HIFI-OUT-AMP
80MV
500MV
150MV
315MV
IC 900
TDA 7302
MASTER
OUTPUT
MIX-INP
DIREKT-INP
NORM-INP
LINE-SW
IC 910
HEF 4052
MOS
LINE-OUT AMP
IC 915
1/2 MC 33078
HEAD- PHONE-SW
IC 940
HEF 4052
MOS
TONE-SW
IC 955
HEF 4052
MOS
INP-SW LEFT
IC 870
HEF 4051
MOS
INP-SW RIGHT
IC 880
HEF 4051
MOS
HIFI-L
LINE-L
AV-L
HF-L
CV-L
HIFI-R
LINE-R
AV-R
HF-R
CV-R
AV1-2
AV1-1
KH1-4
KH1-5
ST3
ZF-VERSTAERKER/
IF-AMPLIFIER
AUDIO-L
AUDIO-R
AUDIO
MOD
MONO
NC
IC 975
HEF 4094
MOS
IC 980
1/2 RC 4559
CD980
RLS 4148
CD990
RLS 4148
+12VD

IC870, IC880

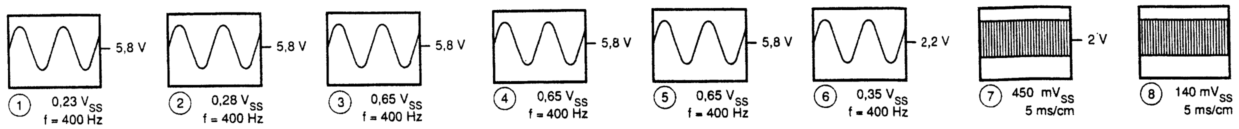
| FKT / SOURCE \ PIN | 9 | 10 | 11 |
|---|---|---|---|
| HIFI(PIN1) | 1 | 0 | 0 |
| LINE(PIN15) | 0 | 1 | 0 |
| AV(PIN13) | 0 | 0 | 0 |
| HF(PIN14) | 0 | 0 | 1 |
| CV(PIN12) | 0 | 1 | 1 |

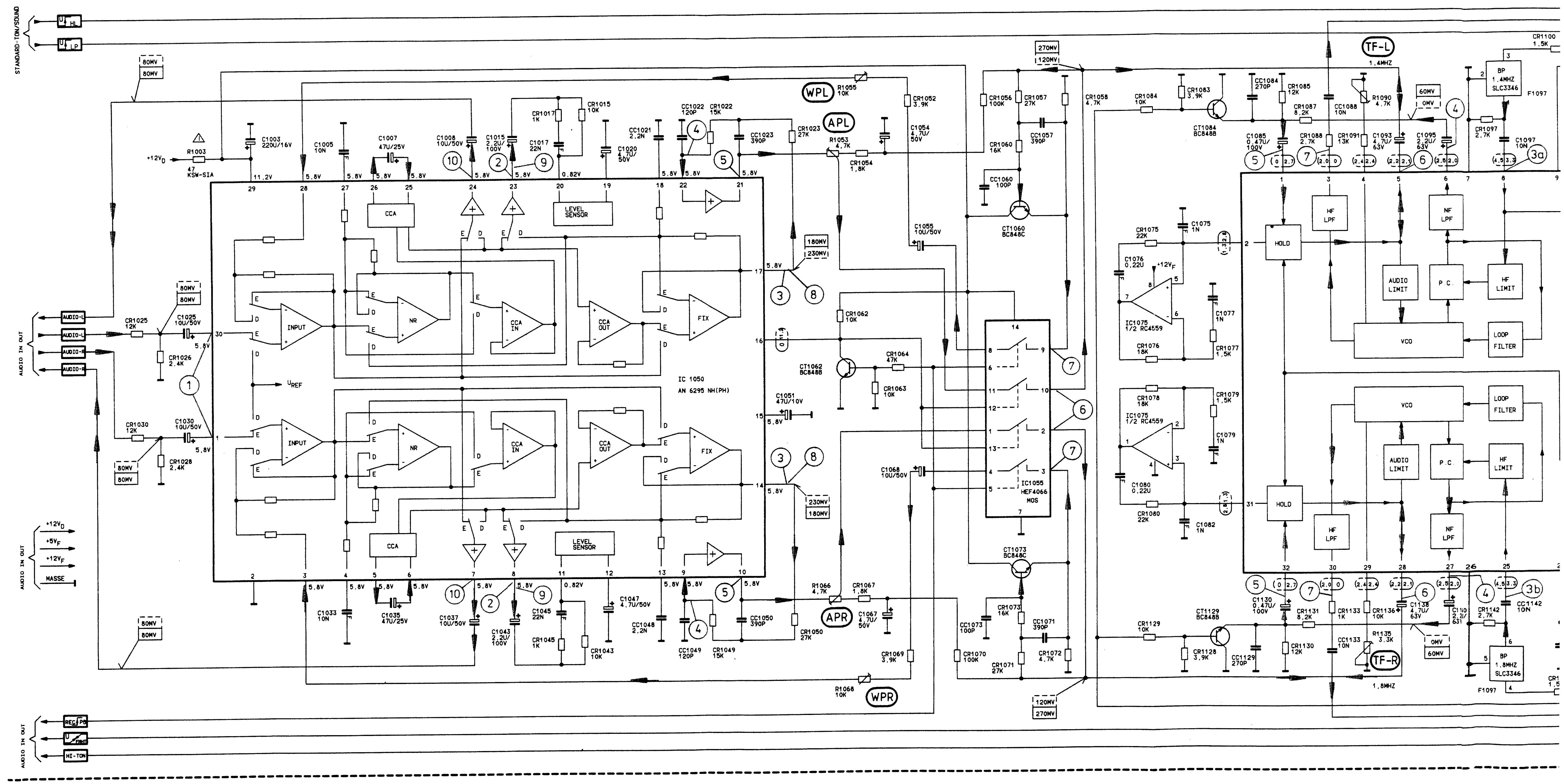

Z FM-TON
AUDIO-L
AUDIO-R
LINE OUT L
LINE OUT R
IC 885 1/2 MC 33078
HIFI-OUT-AMP
LINE-SW
IC 910 HEF 4052 MOS
IC 915 1/2 MC 33078
LINE-OUT AMP
AV1
CHROMA II
IC 900 TDA 7302
MASTER
OUTPUT
MIX-INP
DIREKT-INP
NORM-INP
IC 855 1/2 MC 33078
MIX-AMP
IC 940 HEF 4052 MOS
HEAD-PHONE-SW
KH1
KH-L
KH-R
CV-L
CV-R
IC 945 1/2 MC 33078
IC 955 HEF 4052 MOS
TONE-SW
ST1
CHROMA III
IC 870 HEF 4051 MOS
INP-SW LEFT
IC 880 HEF 4051 MOS
INP-SW RIGHT
HIFI-L
LINE-L
AV-L
HF-L
CV-L
HIFI-R
LINE-R
AV-R
HF-R
CV-R
IC 975 HEF 4094 MOS
IC 980 1/2 RC 4559
STROBE
CLOCK
DATA
SCL
SDA
HI-TON
A3
ABLAUFSTEUERUNG I/ SEQUENCE CONTROL
MASTER
OUTPUT
FM-TON/SOUND
STANDARD-TON/SOUND
OE
OUT2
OUT1
OUT
IN
NORM
MIX
130489


① 0,9 V_SS f = 400 Hz
4 V
② 1,4 V_SS f = 400 Hz
4 V
③ 0,4 V_SS f = 400 Hz
6 V
④ 1,9 V_SS f = 400 Hz
⑤ 1,9 V_SS f = 400 Hz
4 V
⑥ 1,4 V_SS f = 400 Hz
6 V
⑦ 1,4...4 V_SS f = 400 Hz
⑧ 1,4...4 V_SS f = 400 Hz
6 V
⑨ 1,4 V_SS f = 400 Hz

## Audio IN / OUT

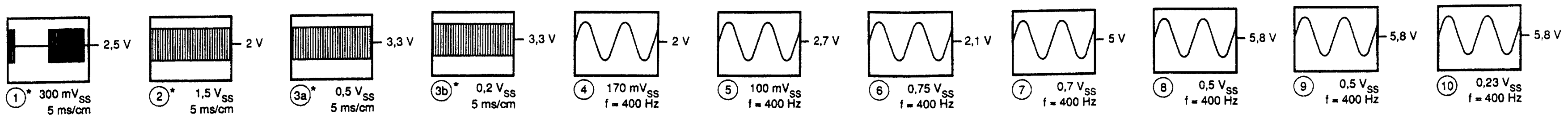
Aufnahme
Record
Registrazione





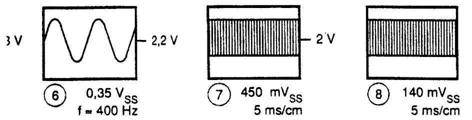
STANDARD-TON/SOUND
U HL
U LP
AUDIO IN OUT
AUDIO-L
AUDIO-L
AUDIO-R
AUDIO-R
+12V_D
+5V_F
+12V_F
MASSE
REC/PB
HI-TON
IC 1050
AN 6295 NH(PH)
INPUT
NR
CCA IN
CCA OUT
FIX
CCA
LEVEL SENSOR
U_REF
WPL
APL
APR
WPR
TF-L
TF-R
IC1055 HEF4066 MOS
IC1075 1/2 RC4559
HOLD
HF LPF
NF LPF
AUDIO LIMIT
P C
HF LIMIT
VCO
LOOP FILTER
BP 1,4MHZ SLC3346
BP 1,8MHZ SLC3346
F1097
1,4MHZ
1,8MHZ
CT1060 BC848C
CT1062 BC848B
CT1073 BC848C
CT1084 BC848B
CT1129 BC848B
R1003 47 KSW-SIA
C1003 220U/16V
80MV
60MV
0MV
270MV
120MV
180MV
230MV
5,8V
0,82V
11,2V

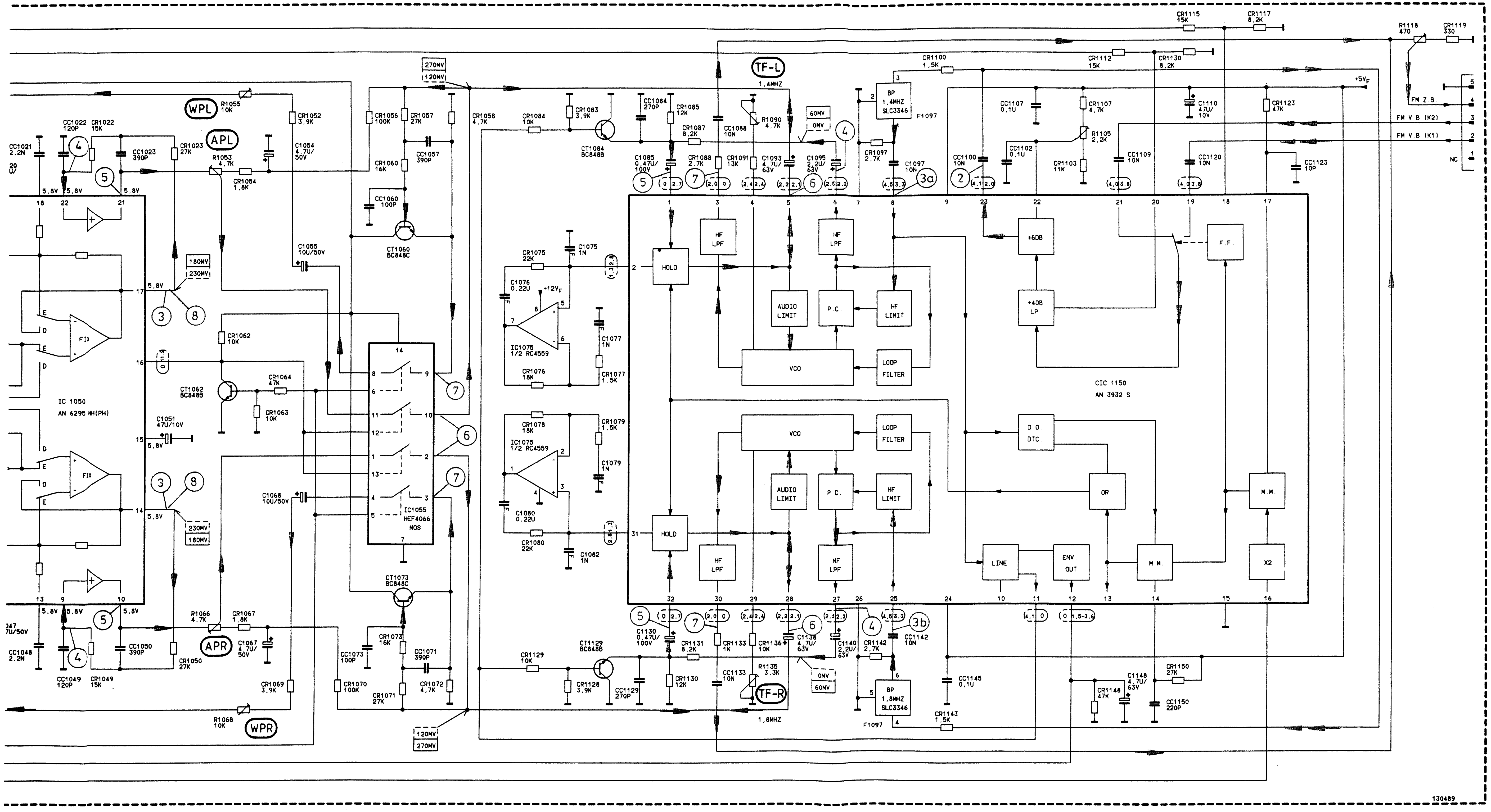
Wiedergabe
Playback
Riproduzione

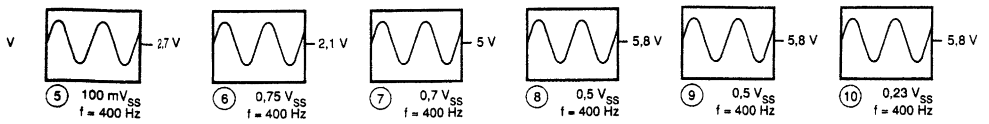


* HiFi-Aufnahme (NP) ohne Bild (Cassette: BASF E 180 SHG)
* HiFi Record (NP) without picture (Cassette: BASF E 180 SHG)
* Registrazione HiFi (NP) senza immagine (Cassette: BASF E 180 SHG)

**HiFi-Ste**
**HiFi Ste**
**Audio s**




IC 1050
AN 6295 NH(PH)
FIX
WPL
APL
APR
WPR
TF-L
TF-R
1,4MHZ
1,8MHZ
IC1055
HEF4066
MOS
CT1060 BC848C
CT1062 BC848B
CT1073 BC848C
CT1084 BC848B
CT1129 BC848B
IC1075 1/2 RC4559
CIC 1150
AN 3932 S
HOLD
HF LPF
NF LPF
AUDIO LIMIT
P.C.
HF LIMIT
VCO
LOOP FILTER
±6DB
+4DB LP
F.F.
D.O. DTC.
OR
LINE
ENV OUT
M.M.
X2
BP 1,4MHZ SLC3346
BP 1,8MHZ SLC3346
F1097
270MV
120MV
180MV
230MV
60MV
0MV
+5V_F
+12V_F
FM Z.B
FM V B (K2)
FM V B (K1)
NC
KT1
KOPFVERSTAERKER/ HEAD AMPLIFIER
130489



REC ±70KHZ

PLAY 333HZ

# HiFi-Stereo-Ton
# HiFi Stereo Sound
# Audio stereo HiFi

( V ) GLEICHSPG. BEI AV-AUFN. U. OHNE SIGNAL
DC VOLTAGE ON RECORDING AV AND WITHOUT SIGNAL

( V ) GLEICHSPG. BEI HIFI-WIEDERGABE
DC VOLTAGE ON PLAYBACK HIFI

G)

## Ⓓ Abgleich (HiFi-Ton)

**Meßgeräte :**
Oszilloskop mit Tastkopf 10 : 1, Frequenzzähler, Tongenerator, NF-Millivoltmeter, Testcassette (HiFi), Videocassette Type BASF E 180 Chromdioxid Super HG

**Servicearbeiten nach Bausteinwechsel:**
Abgleich Nr. 1...5 (HiFi-Ton) und Abgleich Nr. 1...4 (Standard-Ton).

## GB Adjustment (HiFi Sound)

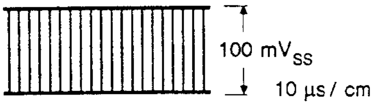
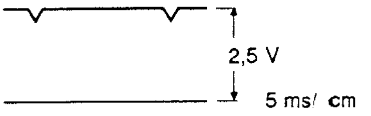
**Test equipment:**
Oscilloscope with 10 : 1 probe, frequency counter, AF generator, AF millivoltmeter, Test cassette (HiFi), Video cassette Type BASF E 180 Chrome dioxid Super HG

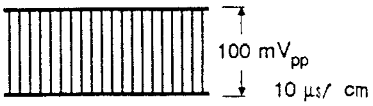
**Servicing work after changing board:**
Adjustments no. 1...5 (HiFi Sound) and adjustments no. 1...4 (Standard Sound).

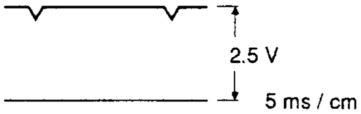
## Ⓘ Taratura (Audio HiFi)

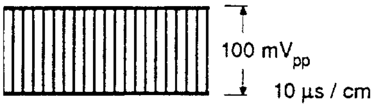
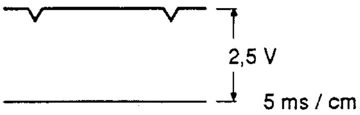
**Strumenti :**
Oscilloscopio con sonda 10 : 1, frequenzimetro, millivoltmetro BF, generatore audio, cassetta campione (HiFi), cassetta tipo BASF E 180 al biossido di cromo Super HG

**Lavori da eseguire dopo la sostituzione del modulo:** Tarature no. 1...5 (audio HiFi) e tarature no. 1...4 (audio standard).

| Ⓓ Abgleich | Vorbereitung | Betriebsart / Cassette | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| 1. Trägerfrequenz (nach Wechsel des CIC 1150)<br>Linker Kanal<br>Rechter Kanal | Frequenzzähler:<br>CIC 1150-(3)<br>CIC 1150-(30) | Kein NF-Signal einspeisen!<br>HiFi - Aufnahme | R 1090 (TF-L)<br>R 1135 (TF-R) | Frequenz auf 1,4MHz ± 5kHz einstellen.<br>Frequenz auf 1,8MHz ± 5kHz einstellen. |
| 2. Aufsprechstrom -Voreinstellung | CIC 1150-(3) über 0,1 µF an Masse legen.<br>Oszilloskop:<br>Stecker KT 1-4 | HiFi - Aufnahme | R 1118 |  <br>Kondensator entfernen. |
| 3. Wiedergabe-Amplitude (nach Wechsel von IC 1050 und CIC 1150)<br>Linker Kanal<br>Rechter Kanal | NF-Millivoltmeter:<br>⊖→ Links (L)<br>⊖→ Rechts (R) | Testcassette (HiFi) wiedergeben | R 1055 (WPL)<br>R 1068 (WPR) | Spannung auf 270 mV$_{eff}$ einstellen. |
| 4. Hubabgleich (nach Wechsel von IC 1050 und CIC 1150)<br>Linker Kanal<br>Rechter Kanal | Tongenerator:<br>⊖← L<br>⊖← R<br>500 mV$_{eff}$ / 400Hz<br>NF-Millivoltmeter:<br>⊖→ L<br>⊖→ R | HiFi - Aufnahme, manuelle Aussteuerung | R 992 (Master) | Ausgangsspannung auf 500 mV$_{eff}$ einstellen. |
| | | Wiedergabe dieser HiFi - Aufnahme | R 1053 (APL)<br>R 1066 (APR) | Die Wiedergabepegel dieser HiFi - Aufnahme müssen 500 mV$_{eff}$ betragen. Gegebenenfalls Hub des jeweiligen Kanals wiederholt ändern, bis der Wiedergabepegel der Eigenaufnahme 500 mV$_{eff}$ ± 50 mV$_{eff}$ beträgt. |
| 5. FM-Hüllkurven-Spannung (erforderlich nach Kopfscheibenwechsel und Bausteintausch) | Oszilloskop:<br>CIC 1150-(12) | Testcassette (HiFi) wiedergeben | R 1105 (FMH) |  |

| GB Adjustment | Preparation | Cassette Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| 1. Carrier frequency (after replacing the CIC 1150)<br>Left channel<br>Right channel | Frequency counter:<br>CIC 1150-(3)<br>CIC 1150-(30) | Do not feed in an AF signal!<br>HiFi record | R 1090 (TF-L)<br>R 1135 (TF-R) | Set frequency to 1,4MHz ± 5kHz.<br>Set frequency to 1,8MHz ± 5kHz. |
| 2. Record current -Preadjustment | Connect CIC 1150-(3) to chassis via 0.1µF<br>Oscilloscope:<br>Plug KT 1-4 | HiFi record | R 1118 |  <br>Remove the capacitor |
| 3. Playback amplitude (after replacing IC 1050 and CIC 1150)<br>Left channel<br>Right channel | AF millivoltmeter:<br>⊖→ Left (L)<br>⊖→ Right (R) | Playback the test cassette (HiFi) | R 1055 (WPL)<br>R 1068 (WPR) | Set voltage to 270 mV$_{rms}$. |

| | | | | |
|---|---|---|---|---|
| 4. Deviation adjustment (after replacing IC 1050 and CIC 1150)<br>Left channel<br>Right channel | AF generator:<br>⊖ L<br>⊖ R<br>500 $mV_{eff}$ / 400Hz<br>AF millivoltmeter:<br>⊖> L<br>⊖> R | HiFi record manual recording level control | R 992 (Master) | Set output voltage to 500 $mV_{rms}$. |
| | | Playback this HiFi record | R 1053 (APL)<br>R 1066 (APR) | HiFi record must show a playback level of 500 $mV_{rms}$.<br>If necessary, vary the deviation of the respective channel repeatedly until the playback level of the recorded signal is 500 $mV_{rms}$ ± 50 mV. |
| 5. Voltage of the envelope (necessary after changing the head wheel and the Sound module) | Oscilloscope:<br>CIC 1150-(12) | Playback the test cassette (HiFi) | R 1105 (FMH) |  |

| Ⓘ Taratura | Preparazione | Funzionamento / Cassetta | Regolazione | Procedimento |
|---|---|---|---|---|
| 1. Frequenza portante (dopo sostituz. di CIC 1150)<br>Canale sinistro<br>Canale destro | Frequenzimetro:<br>CIC 1150-(3)<br>CIC 1150-(30) | Non applicare il segnale BF!<br>Registrazione HiFi | R 1090 (TF-L)<br>R 1135 (TF-R) | Regolare una frequenza di 1,4MHz ± 5kHz .<br>Regolare una frequenza di 1,8MHz ± 5kHz. |
| 2. Regolazione corrente di registrazione | Collegare a massa CIC 1150-(3) tramite 0,1μF<br>Oscilloscopio: contatto KT 1-4 del connettore | Registrazione HiFi | R 1118 |  <br>Togliere il condensatore. |
| 3. Ampiezza di riproduzione (dopo sostituz. di IC 1050 e CIC 1150)<br>Canale sinistro<br>Canale destro | Millivoltmetro BF:<br>⊖> sinistro (L)<br>⊖> destro (R) | Riprodurre la cassetta campione (HiFi) | R 1055 (WPL)<br>R 1068 (WPR) | Regolare la tensione a 270 $mV_{eff}$. |
| 4. Taratura della deviazione (dopo sostituz. di IC 1050 e CIC 1150)<br>Canale sinistro<br>Canale destro | Generatore audio:<br>⊖ L / R<br>500 $mV_{eff}$ / 400Hz<br>Millivoltmetro BF:<br>⊖> L<br>⊖> R | Registrazione HiFi pilotaggio manuale | R 992 (Master) | Regolare la tensione d´uscita a 500 $mV_{eff}$ . |
| | | Riproduzione di guesta registrazione HiFi | R 1053 (APL)<br>R 1066 (APR) | I livelli di riproduzione di guesta registrazione devono essere di 500 $mV_{eff}$. Event. te variare più volte la deviaz. del canale fino ad avere 500 $mV_{eff}$ ± 50 $mV_{eff}$. |
| 5. Tensione di inviluppo FM (necessaria dopo sostituz. ruota test. e modulo) | Oscilloscopio:<br>CIC 1150-(12) | Riprodurre la cassetta campione (HiFi) | R 1105 (FMH) |  |

(D)

## Bild-/Ton - Kopfverstärker

**Funktionsübersicht**

Der Bild-/Ton-Kopfverstärker hat die Aufgabe bei Aufnahme die FM-Signale den rotierenden Übertragern zuzuleiten. Das Signal wird dann über das Kopfrad auf Band aufgesprochen.
Bei Wiedergabe werden die vom Band abgetasteten FM-Signale verstärkt, über die Steckerkontakte KB 1-3/-5 dem Videobaustein 3 und über KT 1-2/-3 der Tonverarbeitung zugeführt. Des weiteren erfolgt die Umschaltung der FM vom Band bei den Featurefunktionen und Longplay (LP)-Wiedergabe.

**1. Aufnahme**

**- Video**

Das FM-Signal gelangt von den Aufsprechstufen auf dem Videobaustein 3 bei Normalplay (NP) über KB 1-10, den Widerstand CR 3570 und den Steckerkontakt P 2901-2, bei LP über KB 1-11, CR 3576 und P 2901-5 zum rotierenden Übertrager. Die Spannung +12$V_A$ schaltet die Transistoren CT 3307/CT 3515/CT 3525/CT 3535 durch. Somit erhalten die Übertragerwicklungen über die Steckerkontakte P 2901-1/-3/-4/-6 Massepotential.

**- Audio**

Vom Tonbaustein gelangt das FM-Signal über KT 1-4 und den Einsteller R 3625 an IC 3600-(17). In diesem IC durchläuft es einen Verstärker und wird über IC 3600-(8), CC 3597 und P 2901-9 dem Übertrager zugeleitet. Die Spannung +12$V_A$ schaltet im IC 3600 die beiden anderen Enden des Übertragers über IC 3600-(9),-(10) an Masse.

**2. Wiedergabe**

**- Video**

Das gemeinsamen Enden der rotierenden Übertrager "NP" und "LP" erhalten über P 2901-2 und CT 3574, bzw. P 2901-5 und CT 3580 HF-Masse. Die FM-Informationen vom Band gelangen bei Normalplay über die Steckerkontakte P 2901-1/-3 an die Pins 4 und 3 des IC 3530; bei Longplay über P 2901-4 / -6 an IC 3530-(9), -(8) Im IC 3530 durchlaufen sie je einen Verstärker und werden anschließend in den Kopfschaltstufen durch den HI-Impuls kopfbezogen zum FM-Signal geschaltet. Das FM-Signal durchläuft im IC weitere Verstärkerstufen und steht an IC 3530-(15) ungeregelt für die Chromaverarbeitung und an IC 3530-(20) geregelt für die BAS-Verarbeitung zur Verfügung. Das FM-Signal für die Chromaverarbeitung führt man über CT 3565 und KB 1-5 dem Videobaustein 3 zu. Das FM-Signal für die BAS-Signal-Verarbeitung gelangt über CT 3562 und KB 1-3 zum Videobaustein 3.
Bei Standbild (NP) verwendet man für das FM-Signal die FM-Informationen von Kopf K1-NP und K1-LP. Diese werden durch den Kopfumschaltimpuls "LP", anstelle der FM-Information von Kopf K2-NP zum FM-Signal geschaltet. Bei Zeitlupenwiedergabe und Bildsuchlauf werden durch die Kopfumschaltimpulse "HI" und "LP" die FM-Informationen der vier Köpfe K1-NP, K2-NP und K1-LP, K2-LP zum FM-Signal zusammengeschaltet.

**- Audio**

Das gemeinsame Ende der Übertrager erhält über P 2901-9 und IC 3600-(8) HF-Masse. Die FM-Signale vom Band gelangen über P 2901-8/ -10 und die Pins 6 und 4 in den IC 3600, wo man sie verstärkt und über die Pins 13/15 und die Steckerkontakte KT 1-2 / -3 dem Tonbaustein zuführt.

(GB)

## Video/Sound Head Amplifier

**Functional Overview:**

On record the Video/Sound Head Amplifier has the task of feeding the FM Signal to the rotating transformer. The signal is then recorded onto the tape by the video heads on the head wheel.
On playback the FM signal scanned from the tape is amplified, and is fed via the plug contacts KB1-3/-5 to the Video Module 3 and via KT1-2/-3 for sound processing. In addition switching of the FM from tape for the Feature functions and Long Play (LP) is carried out.

**1. Record**

**- Video**

The FM signal from the record stages in the Video Module 3 on Normal play (NP) is fed via KB1-10, the resistor CR 3570 and the plug contact P2901-2, on LP via KB1-11, CR 3576 and P2901-5 to the rotating transformer. The voltage supply +12 $V_A$ switches on the transistors CT 3307/CT 3515/CT 3525/CT 3535 on. By this method the transformer windings are connected to chassis potential via the plug contacts P2901-1/-3/-4/-6.

**- Audio**

From the Sound Module the FM Signal is fed via KT1-4 and the adjustment resistor R 3625 to IC 3600-(17). In this IC the signal passes through an amplifier and is fed via IC 3600-(8), CC 3697 and P2901-9 to the transformer. The voltage supply +12$V_A$ switches the other ends of the transformer windings through IC 3600 via IC 3600-(9), -(10) to chassis.

**2. Playback**

**-Video**

The common ends of the rotating transformer "NP" and "LP" is connected to the HF chassis via P2901-2 and CT 3574, or P2901-5 and CT 3580. The FM information from tape is fed on Normal Play via the plug contacts P2901-1/-3 to the Pins 4 and 3 of the IC 3530; on Long Play via P2901-4/-6 to IC 3530-(9), -(8). In IC 3530 the signal passes through an amplifier and the FM signal is switched in the Head-Switching stage which is controlled by the HI Pulse depending on the Head Sequence. The FM signal passes through further amplifying stages in the IC and is present on IC 3530-(15) as an uncontrolled (in gain) signal for the chroma processing and in the gain controlled form on IC 3530-(20) for CVS processing. The FM signal for chroma processing is taken from CT 3565 and KB1-5 to the Video Module 3. The FM signal for the CVS signal processing is taken from CT 3562 and KB1-3 to the Video Module 3.
On Freeze Frame (NP) the FM signals, containing the FM information from the heads K1-NP and K1-LP, are used. This is carried out by the head switching pulse "LP", and is used instead of the FM information from the head K2-NP. On Slow Motion playback and Picture Search, due to the Head Switching Pulse "HI" and "LP", the FM information from the four heads K1-NP, K2-NP and K1-LP, K2-LP are combined to produce the FM signal.

**- Audio**

The common ends of the transformer are connected to HF chassis by P2901-9 and IC 3600-(8). The FM signals from tape passes via P2901-8, -9 and Pins 6 and 4 in IC 3600, in which they are amplified, and fed out via Pins 13/15 and the plug contacts KT1-2/-3 to the Sound Module.

(I)

## Amplificatore testine video-audio

**Prospetto delle funzioni**

In registrazione, l'amplificatore delle testine video - audio ha la funzione di applicare i segnali FM ai trasduttori rotanti. Il segnale viene poi inciso su nastro mediante la ruota testine.
In riproduzione, il segnale FM proveniente dal nastro viene amplificato ed inoltrato ai contatti KB1-3/-5 per il modulo video 3 ed ai contatti KT 1-2/-3 per l'elaborazione audio. Inoltre avviene la commutazione del segnale FM dal nastro per le fuzioni speciali e la riproduzione Longplay (LP).

**1. Registrazione**

**- Video**

Il segnale FM giunge dagli stadi di registrazione sul modulo video 3 al trasduttore rotante, in regime normale per mezzo del connettore KB1-10, della resistenza CR 3570 e del connettore P2901-2 ed in longplay mediante KB1-11, CR 3576 e P2901-5. La tensione +12 $V_A$ rende conduttivi i transistor CT 3307/CT 3515/CT 3525/CT 3535. In questo modo gli avvolgimenti dei trasduttori ricevono potenziale di massa mediante i contatti P2901-1/-3/-4/-6 del connettore.

**- Audio**

Il segnale FM che proviene dal modulo audio arriva ad IC 3600-(17) per mezzo di KT1-4 e del regolatore R 3625. Nell'integrato esso percorre un amplificatore e quindi giunge al trasduttore attraverso IC 3600-(8), CC 3597 e P2901-9. La tensione +12 $V_A$ collega a massa gli altri due terminali del trasdurrore mediante IC 3600-(9), -(10).

**2. Riproduzione**

**- Video**

I terminali comuni dei trasduttori rotanti "NP" e "LP" sono a massa per le componenti AF mediante P2901-5 e CT 3580. I segnali FM provenienti dal nastro giungono in regime normale ai pin 4 e 3 di IC 3530 attraverso i contatti P2901-1/ -3 del connettore mentre in longplay sono ai pin 9 e 8 per mezzo di P2901-4/ -6. In questo integrato, ciascun segnale attraversa un amplificatore e nell'apposito stadio commutatore viene applicato alla relativa testina mediante l'impulso HI. Il segnale FM attraversa ulteriori stadi amplificatori e poi viene applicato da una parte non regolato ad IC 3530-(15) per l'elaborazione del segnale croma e dall'altra regolato al pin 20 per il segnale BAS. Il segnale FM per l'elaborazione croma viene condotto nel modulo video 3 per mezzo di CT 3565 e KB1-5. Il segnale FM per l'elaborazione del segnale BAS arriva al modulo video 3 mediante CT 3562 e KB1-3. Col fermo immagine (NP) per il segnale FM si utilizza l'informazione FM proveniente dalle testine K1-NP e K1-LP. Questa viene associata al segnale FM mediante l'impulso di commutazione "LP", al posto dell'informazione FM fornita dalla testina K2-NP. Nella riproduzione rallentata ed in ricerca immagine vengogo combinate insieme le informazioni FM delle quattro testine K1 -NP, K2-NP e K1-LP, K2-LP al segnale FM mediante gli impulsi di commutazione "HI" e "LP".

**- Audio**

Il terminale comune dei trasduttori è a massa per la componente AF attraverso P2901-9 ed IC 3600-(8). I segnali FM forniti dal nastro giungono attraverso P2901-8/ -10 ed i pin 6 e 4 all'integrato IC 3600, dove vengono amplificati e successivamente inviati al modulo audio tramite i pin 13/15 ed i contatti KT1-2/ -3 del connettore.

## D Abgleich

**Meßgeräte :**
Oszilloskop mit Tastkopf 10 : 1
**Servicearbeiten nach Bausteinwechsel: –**

## GB Adjustment

**Test equipment:**
Oscilloscope with 10 : 1 probe
**Servicing work after changing board: –**

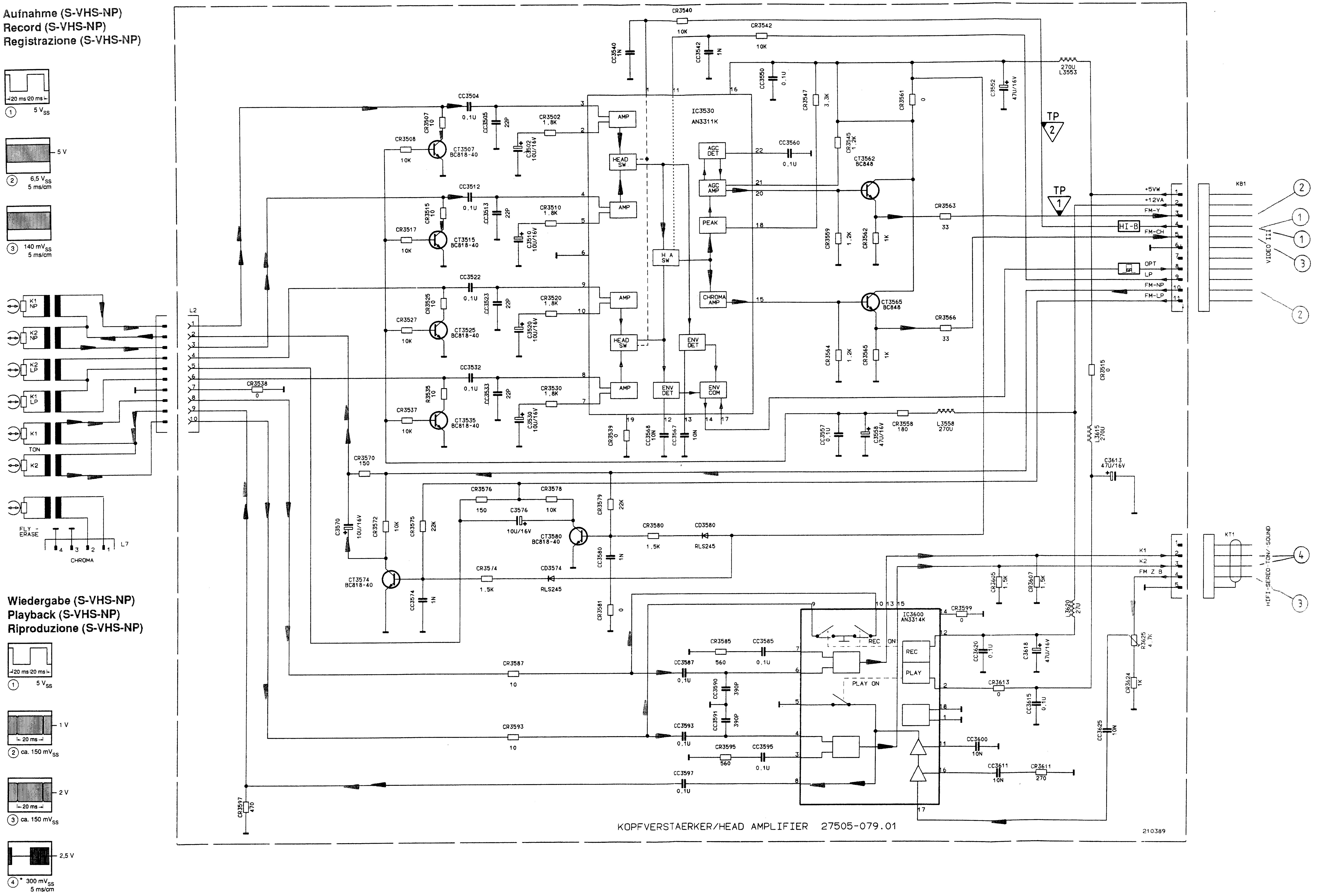
## I Taratura

**Strumenti :**
Oscilloscopio con sonda 10 : 1
**Lavori da eseguire dopo la sostituzione del modulo: –**

| D Abgleich | Vorbereitung | Betriebsart | Abgleich mit | Abgleichvorgang |
|---|---|---|---|---|
| Audio-Aufsprechstrom | CIC 1150-(3) –Tonbaustein– über 0,1µF an Masse legen.<br>Oszilloskop:<br>IC 3600-(8) | HiFi - Aufnahme | R 3625 | Amplitude des FM-Signals auf 2 $V_{ss}$ einstellen.<br>Kondensator entfernen. |

| GB Adjustment | Preparation | Operation mode | Adjust with | Adjustment Procedure |
|---|---|---|---|---|
| Audio record current | Connect CIC 1150-(3) –Sound Module– to chassis via 0.1µF.<br>Oscilloscope:<br>IC 3600-(8) | HiFi recording | R 3625 | Set the amplitude of the FM signal to 2 $V_{pp}$ .<br>Remove the capacitor. |

| I Taratura | Preparazione | Funzionamento | Regolazione | Procedimento |
|---|---|---|---|---|
| Corrente di registrazione audio | Collegare a massa CIC 1150-(3) –Modulo Audio– tramite 0,1µF.<br>Oscilloscopio:<br>IC 3600-(8) | Registrazione HiFi | R 3625 | Regolare l´ampiezza di segnale FM a 2 $V_{pp}$.<br>Togliere il condensatore. |

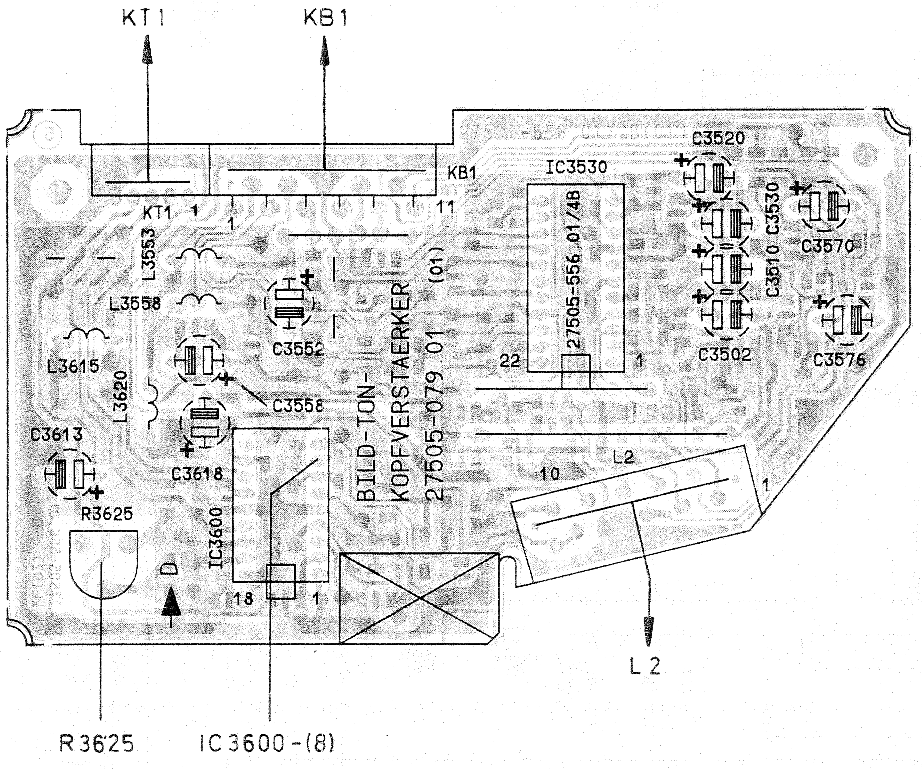


Aufnahme (S-VHS-NP)
Record (S-VHS-NP)
Registrazione (S-VHS-NP)
20 ms 20 ms
① 5 V_SS
② 6,5 V_SS 5 ms/cm
5 V
③ 140 mV_SS 5 ms/cm
K1 NP
K2 NP
K2 LP
K1 LP
K1
TON
K2
FLY - ERASE
CHROMA
L7
L2
Wiedergabe (S-VHS-NP)
Playback (S-VHS-NP)
Riproduzione (S-VHS-NP)
① 5 V_SS
1 V
20 ms
② ca. 150 mV_SS
2 V
③ ca. 150 mV_SS
2,5 V
④* 300 mV_SS 5 ms/cm
IC3530 AN3311K
AMP
HEAD SW
H A SW
AGC DET
AGC AMP
PEAK
CHROMA AMP
ENV DET
ENV COM
CT3507 BC818-40
CT3515 BC818-40
CT3525 BC818-40
CT3535 BC818-40
CT3562 BC848
CT3565 BC848
CT3580 BC818-40
CT3574 BC818-40
CD3580 RLS245
CD3574 RLS245
IC3600 AN3314K
REC
PLAY
REC ON
PLAY ON
TP 2
TP 1
HI-B
OPT
+5VW
+12VA
FM-Y
FM-CH
LP
FM-NP
FM-LP
K81
VIDEO III
K1
K2
FM Z B
KT1
HIFI-SERED TON/-SOUND
KOPFVERSTAERKER/HEAD AMPLIFIER 27505-079.01
210389

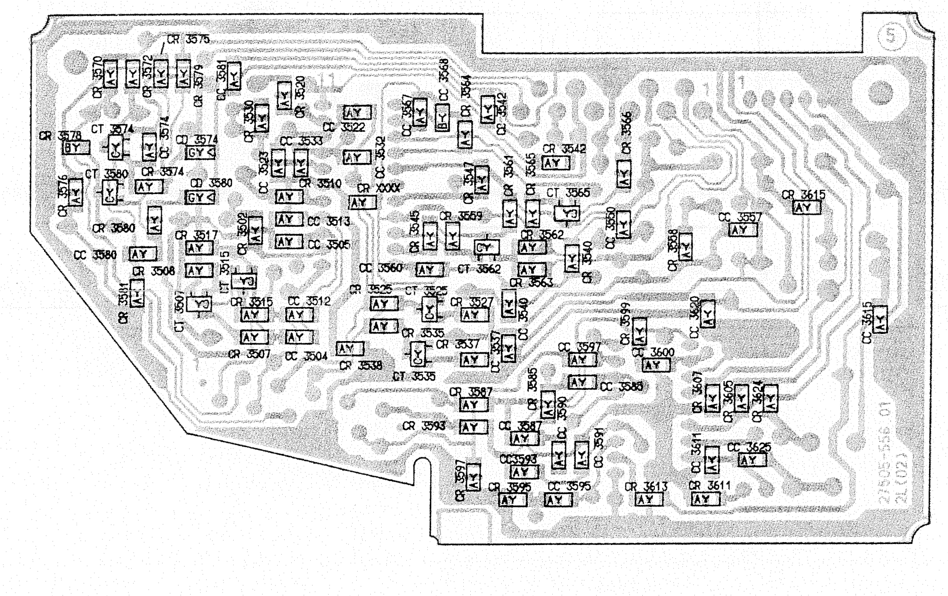
* HiFi-Aufnahme (NP) ohne Bild (Cassette: BASF E 180 SHG)
* HiFi Record (NP) without picture (Cassette: BASF E 180 SHG)
* Registrazione HiFi (NP) senza immagine (Cassetta: BASF E 180 SHG)

# Kopfverstärker
# Head amplifier
# Amplificatore testina

Ansicht von der Bestückungsseite
View of components side
Vista dal lato componenti
Vue cote composants
Vista por la parte de los componentes



Ansicht von der Lötseite
View of soldering side
Vista dal lato saldature
Vue cote soudure
Vista por la parte de las soldaduras



## (D) Dialog Fernbedienung

**Funktionsübersicht**
Die Dialog-Fernbedienung RP 80 LCD besteht neben dem 4 Bit Mikrocomputer CIC 4610 aus folgenden Funktionsgruppen:

- Liquid Crystal Display (LCD)
- 3 Bedienebenen (Tastatur-Matrix einschließlich Schiebeschalter und Reed-Kontakt)
- Infrarot-Transmitter

**1. Liquid Crystal Display (LCD)**
**Prinzip:**
Bei dem eingesetzten LCD-Display handelt es sich um eine mit Auflicht (reflektiv) arbeitende Flüssigkristallanzeige. Zwischen zwei Glasplatten mit aufgedampften, durchsichtigen Elektroden, welche die Form und die Größe des zur Anzeige kommenden Symbols besitzen, befindet sich eine etwa 10µm dünne Flüssigkristallschicht. Die länglichen Flüssigkristallmoleküle sind einheitlich orientiert und können durch ein elektrisches Feld an den Elektroden in ihrer Schwingungsebene um 90° gedreht werden. Zwischen den an der Front- und Rückseite angebrachten Polarisationsplatten besteht in der Polarisationsachse ein Unterschied von 90°.
Ohne elektrisches Feld an den Elektroden liegen die Flüssigkristallmoleküle parallel zu den Platten, wodurch die Schwingungsebene des einfallenden Lichts um 90° gedreht wird. Das einfallende Licht kann beide Polarisationsfilter passieren und das LCD - Diplay erscheint transparent.
Steht ein elektrisches Feld an den Elektroden, werden die Flüssigkristallmoleküle senkrecht zu den Platten ausgerichtet. Die Schwingungsebene des einfallenden Lichts wird nicht gedreht. Die rückwärtige Polarisatorplatte absorbiert das einfallende Licht und das Anzeigebild (Symbol) erscheint schwarz.
**Ansteuerung des LCD - Displays:**
Die Ansteuerung der vorderen Elektroden (32 Segmente) und der hinteren Elektroden (3 Common) geschieht durch die Segment - Ausgänge S 0...S 31 und die Common - Ausgänge COM 0...COM 2 des Mikrocomputers CIC 4610. Die Ansteuerung des Displays erfolgt im Zeit-Multiplex-Verfahren mit einem Scanning-Takt von 80 Hz bei einem Tastverhältnis von 1:3 und einer Unterteilung der LCD-Ansteuerspannungen im Verhältnis 1:3.
Der externe Spannungsteiler CR4603, CR 4605, CR 4607 erzeugt die LCD-Ansteuerspannungen. Bei aktiviertem LCD-Display steht an CIC 4610-(25), -(26) eine Gleichspannung von ca. 3V. Diese Spannung entspricht der LCD -Ansteuerspannung $V_{LC0} = 3V = 3/3$. An CIC 4610-(27) ergibt sich die LCD - Ansteuerspannung $V_{LC1} = 2V = 2/3 \times V_{LC0}$ und an CIC 4610-(28) die Ansteuerspannung $V_{LC2} = 1V = 1/3 \times V_{LC0}$.
Ob ein Symbol der Anzeige leuchtet, hängt von der Größe der Spannungsdifferenz zwischen Segment und Common ab. Beträgt diese Spannungsdifferenz $V_{LC0} = \pm 3V$, leuchtet ein Symbol. Bei Symbolen, die nicht leuchten sollen, beträgt die Spannungsdifferenz $V_{LC2} = \pm 1V$.
Um elektrochemische Reaktionen zu vermeiden, wird das LCD -Display mit Wechselspannung angesteuert, d.h., während eines Scanning-Taktes wird die Polarität zwischen Segment und Common geändert.
Beispiel: Symbol "PROG" soll leuchten
Spannungsverlauf zwischen Segmentanschluß S2 CIC 4610-(71) und Commonanschluß COM2 CIC 4610 -(23) :

## (GB) Dialogue Remote Control

**Functional Overview**
The Dialogue Remote Control RP 80 LCD consists of the 4 Bit Microcomputer CIC 4610 and the following function groups:

- Liquid Crystal Display (LCD)
- 3 Control Levels (Keyboard-Matrix including the Shift Switch and Reed Contact)
- Infrared Transmitter

**1. Liquid Crystal Display (LCD)**
**Principles:**
With this LCD-Display one is considering a device which makes the Liquid Display indication visible by using reflection principles. A thin (10 µm) Liquid Crystal layer is provided between two glass panels on which vapour deposited transparent electrodes take the form and size of the indications and symbols. The acicular Liquid Crystal molecules are uniformly orientated and their plane can be rotated by 90° when influenced by an electric field generated on the electrodes. A difference of 90° exists in the polarisation axis between the polarisation panels fitted on the front and near sides.
Without an electric field on the electrodes the Liquid Crystal molecules take up a position in which they are parallel to the panels. In this position the plane of polarisation rotates the incident light by 90°. The incident light passes through both polarising filters and the LCD-Display appears transparent.
If an electric field is present on the electrodes, the Fluid Crystal molecules are perpendicular to the panel. The plane of polarisation does not rotate the incident light. The polarising panel on the rear absorbes the incident light and the indication (Symbol) appears as a dark shape.

**Driving the LCD-Displays:**
The drive of the electrodes on the front (32 Segments) and the rear electrodes on the rear (3 Common) are driven by the Segment Outputs S 0...S 31 and the Common-Outputs COM 0...COM 2 of the Microcomputer CIC 4610. The drive of the display is carried out in Time Multiplex Process by a Scanning Clock of 80 Hz with a mark to space ratio of 1:3 and division of the LCD drive voltages in the ratio of 1:3.
The external voltage divider CR 4603, CR 4605, CR 4607 generate the LCD drive voltages. With the LCD activated, on CIC 4610-(25), -(26) a DC voltage of approx 3V is present. This voltage corresponds to the LCD drive voltage $V_{LCO} = 3V = 3/3$. On CIC 4610-(27) the LCD drive voltage $V_{LC1} = 2V = 2/3 \times V_{LC0}$ and on CIC 4610- (28) the drive voltage $V_{LC2} = 1V = 1/3 \times V_{LC0}$ is present.
Whether a symbol in the Indicator illuminates or not is dependant on the amount of voltage difference between the Segment and Common. If this corresponds to a voltage difference of $V_{LCO} = \pm 3V$, the symbol illuminates. With symbols which should not illuminate, this corresponds to a voltage difference of $V_{LC2} = \pm 1V$.
To prevent electro-chemical reactions, the LCD is driven with an alternating voltage, which means that during the period of a single Scanning Clock, the polarity between the Segment and the Common is altered.
Example: The Symbol "PROG" should illuminate.
The voltage sequence between the Segment connection S2 CIC 4610-(71) and the Common connection COM 2 CIC 4610-(23) is as follows:

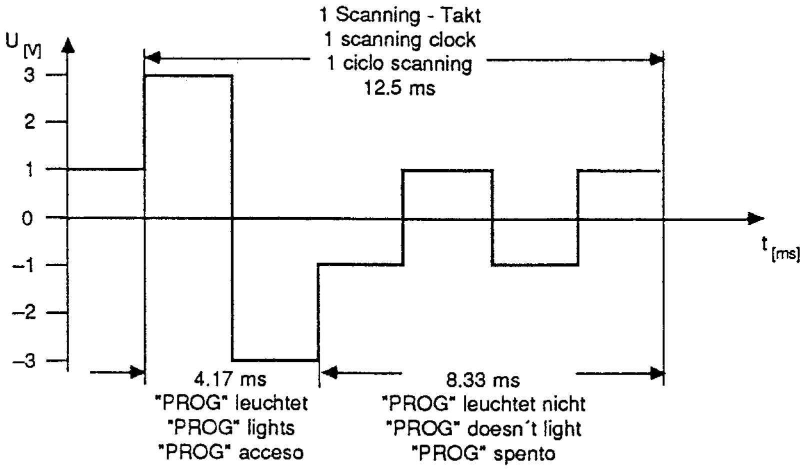
## (I) Telecomando

**Prospetto delle funzioni**
Il telecomando comprende oltre che il microcomputer ad 1 bit CIC 4610 anche i seguenti gruppi di funzione:

- display a cristalli liquidi (LCD)
- 3 sezioni di comando (matrice tastiera con commutatore a cursore e contatto Reed).
- trasmettitore ad infrarossi.

**1. Principio del display LCD**
In questo telecomando viene impiegato un indicatore a cristalli liquidi. Tra due piastre in vetro con elettrodi trasparenti applicati i quali hanno forma e grandezza analoga a quella del simbolo di indicazione, si trova uno strato di cristallo liquido dello spessore di 10 µm circa. Le molecole di cristallo liquido sono orientate omogeneamente e con un campo elettrico applicato agli elettrodi possono venir ruotate di 90° nel loro piano di oscillazione. Gli assi di polarizzazione tra le relative piastre frontale e posteriore risultano sfasati di 90°.
In assenza di campo elettrico, le molecole si trovano parallelamente alle piastre di polarizzazione, sicchè il piano di oscillazione della luce incidente viene ruotato di 90°. La luce incidente può passare attraverso i filtri di polarizzazione e così il display LCD appare trasparente.
Se invece esiste un campo elettrico, le molecole sono orientate verticalmente rispetto alle piastre. Il piano di oscillazione della luce incidente in tal caso non viene ruotato. La piastra di polarizzazione posteriore assorbe la luce ed il simbolo di indicazione appare nero.

**Comando del display LCD:**
Gli elettrodi anteriori (32 segmenti) e posteriori (3 uscite comuni) sono comandati mediante le uscite segmenti S0...S31 e le uscite comuni C0...C2 del microcomputer CIC 4610. Il comando del display avviene secondo il sistema multiplex con una frequenza degli impulsi scanning di 80 Hz per un rapporto di cadenza 1:3 ed una suddivisione delle tensioni di comando LCD in rapporto 1:3.
Il partitore di tensione esterno CR 4603, CR 4605, CR 4607 genera le tensioni di comando LCD. Quando il display LCD è attivato, in CIC 4610-(25), -(26) si trova una tensione continua di 3V circa. Questa tensione corrisponde alla tensione di comando LCD $V_{LC0} = 3V = 3/3$. In CIC 4610-(27) si ottiene la tensione di comando LCD $V_{LC1} = 2V = 2/3 \times V_{LC0}$ e in CIC 4610-(28) la tensione di comando $V_{LC2} = 1V = 1/3 \times V_{LC0}$.
L'accensione di un simbolo dell'indicazione dipende dalla differenza di tensione tra uscita segmento ed uscita comune. Il simbolo si accende con una differenza $V_{LC0} = \pm 3 V$. Per i simboli che devono restare spenti, la differenza di tensione deve essere $V_{LC2} = \pm 1V$.
Per evitare reazioni elettrochimiche, il display LCD viene comandato da una tensione alternata, ciò significa che durante un impulso scanning viene variata la polarià tra l'uscita segmento e l'uscita comune.
Esempio: il simbolo "PROG" deve accendersi.
Andamento della tensione tra il contatto segmento S2 CIC 4610-(71) ed il contatto comune COM 2 CIC 4610-(23):



### 2. Die Bedienebenen:
### Auswertung und Ansteuerung der Tastatur-Matrix:

Die 3 Bedienebenen bestehen aus einem Matrixtastenfeld, angesteuert von 15 Tastatur-Ausgangsports (P20...P23, P30...P32, P40...43, P50...P53) und eingelesen über 11 Tastatur-Eingangsports (P10...P13, P60... P63, P70...P73). Solange keine Taste betätigt wird, befindet sichder µC CIC 4610 im stromsparenden STOP-Modus, in dem der interne Oszillator X1, X2 nicht schwingt. Die Tastatur-Eingänge und der "Wake up-Eingang" P60 liegen über die externen Pull-up-Widerstände CR 4635...CR4649 auf einem High-Potential von 3V.An den Tastatur-Ausgangsports ist in dieser Betriebsart ein Low-Potetial von 0V messbar. Betätigt man in der Tastatur-Matrix eine Taste, wird über den geschlossenen Matrixpunkt das entsprechende Tastatur-Eingangsport durch das Tastatur-Ausgangsport nach Low gezogen. Der µC erkennt anhang des Low-Pegels an den Tastatur-Eingangsports und des "Wake-up-Eingangs", daß eine Taste betätigt wurde. Der "Wake-up-Eingang" P60 ist erforderlich, da der µC an den Tastatur-Eingangsports P10...P13 im Gegensatz zu den restlichen Tastatur-Eingangsports keine interne "Wake-up-Einrichtung" besitzt. Über die Entkopplungsdioden CD 4645...CD 4649 wird der Low-Pegel der Tastatur-Ausgangsports bei einer Tastenbetätigung an das "Wake-up-Eingangsport" P60 gegeben. Nach Aktivieren der internen "Wake-up-Einrichtung" schwingt der interne Oszillator X1, X2 an. Der µC gibt anschließend an den Tastatur-Ausgangsports den Low-aktiven Tastaturscan aus. Durch den über das entsprechende Tastatur-Eingangsport eingelesenen Tastaturscan erkennt der µC welche Taste in den 3 Bedienebenen gedrückt wurde. Läßt man eine betätigte Taste wieder los, wird der interne Oszillator X1, X2, je nach Betriebsart des Fernbediengebers entweder sofort, oder nach ca. 1 Minute abgeschaltet. Der µC befindet sich nun wieder im stromsparenden Stop-Modus.

### 3. Schiebeschalter:

Die Stellung des 3-fach-Schiebeschalters wird durch Einlesen des Tastaturscans (P40...P 42) an P01 erkannt. Ein interner auf 3V schaltbarer Pull up-Widerstand wird nur während des Tastaturscan-Durchlaufs an P01 hinzugeschaltet. Ist kein Tastaturscan-Durchlauf vorhanden, wird der interne Pull up-Widerstand wieder abgetrennt, wobei das Port P01 hochohmig wird.

### 2. The Control Level:
### Evaluation and Drive of the Keyboard-Matrix:

The three Control Levels consists of a Matrix Keyboard Field driven from fifteen Keyboard Ports (P20...P23, P30...P32, P40...P43, P50...P53) and read in via eleven Keyboard Input Ports (P10...P13, P60...P63, P70... P73). As long as no button is depressed, the Microcomputer CIC 4610 takes up the STOP-Mode for the purpose of saving current and during this the internal oscillator X1, X2 does not oscillate. The Keyboard Input and the "Wake-up Input" P60 is connected via external Pull-up-Resistors CR 4635...CR 4649 to a High Potential of 3V. In this operating mode a Low-Potential of 0V can be measured on the Keyboard Output Ports. If a button on the Keyboard Matrix is depressed, via the closed Matrix contacts the appropriate Keyboard-Input Port is pulled to Low by the Keyboard Output Port. The Microcomputer identifies from the Low level on the Keyboard Input Ports and the "Wake-up Inputs", that a button has been depressed. The "Wake-up Input" P60 is required so that the Microcomputer reacts to inputs from the Keyboard Input Ports P10...-P13 in comparison to the other Keyboard Input Ports which have an internal "Wake-up Service". From a decoupling diode network CD 4645...CD 4649 the Low level from the Keyboard Output Ports when a button is depressed, is fed to the "Wake-up Input Port" P60. After the internal "Wake-up-Service" is activated, the internal oscillator X1, X2 begins to operate. Afterwards, the Microcomputer provides a Low-Active Keyboard Scanning Signal on the Keyboard Output Ports. From the input to the appropriate Keyboard-Input Port the Keyboard scan is read and the Microcomputer identifies which button in the three Operating Levels has been depressed. When the button is released, internal oscillator X1, X2 switches off immediately or, according to the operating mode of the Remote Control Transmitter, after approx 1 min. The Microcomputer now returns to the current saving Stop-Mode.

### 3. Shift Switch:

The setting of the three-Stage Shift Switch is identified by the reading in of the Keyboard Scan (P40...P42) into P01. Internally, a 3V switchable Pull-up Resistor is connected to P01 only during the period of the Keyboard Scan. If no Keyboard Scan Sweep is present, the internal Pull-up resistor is disconnected and the Port P01 becomes high resistance.

### 2. Le sezioni di comando.
### Valutazione e comando della matrice tastiera:

Le tre sezioni di comando sono formate da una matrice di tasti comandata da 15 porte di uscita (P20...P23, P30...P32, P40...P43, P50...P53) e letta da 11 porte d'ingresso (P10...P13, P60...P63, P70...P73). Se nessun tasto viene premuto, il µC CIC 4610 si trova in condizione STOP (basso consumo) nella quale l'oscillatore interno X1, X2 non è attivo. Agli ingressi della tastiera e all'ingresso "Wake up" P60 viene applicato un potenziale High di 3V per mezzo delle resistenze pull-up esterne CR 4635...CR 4649. In questa condizione, alle porte di uscita è misurabile un potenziale Low di 0V. Quando si preme un tasto, mediante il punto chiuso della matrice, la porta di uscita pone a livello Low il relativo ingresso. Il µC riconosce dal livello Low applicato a tale ingresso ed all'ingresso Wake up che è stato premuto un tasto. L'ingresso Wake up P60 è necessario perchè contrariamente agli altri ingressi della tastiera, sulle porte P10...P13 il µC non possiede un circuito di Wake up interno. Quando si aziona un tasto, i diodi di prelievo CD 4645...CD 4649 applicano all'ingresso Wake up P60 il livello Low presente alle uscite. Dopo l'attivazione del "circuito interno Wake up", anche l'oscillatore interno X1, X2 si attiva. Successivamente il µC invia all'uscita della tastiera una funzione di ricerca attiva a livello Low. Grazie a questa ricerca svolta dalla porta d'ingresso corrispondente, il µC riconosce quale tasto nelle 3 sezioni è stato premuto. Quando il tasto viene sbloccato, l'oscillatore interno X1, X2 viene disattivato subito o dopo circa 1 minuto a seconda del tipo di funzionamento scelto sul telecomando. Il µC si trova ora nuovamente in situazione Stop a basso assorbimento.

### 3. Commutatore a cursore

La posizione del commutatore a 3 vie viene individuata successivamente alla fase di ricerca (P40...P42) in P01. Una resistenza pull-up interna commutabile a 3V viene aggiunta a P01 solo in situazione di ricerca. Se non viene attivata alcuna ricerca, tale resistenza viene nuovamente separata e la porta P01 diventa ad alta impedenza.

### 4. Reed-Kontakt

Damit der µC die Bedienungsart des Gebers (zugeklappt oder aufgeklappt) erkennt, ist auf der Geberplatte I ein Reed-Kontakt und im klappbaren Teil des Gehäuses ein kleiner Permanentmagnet bestückt. Beim Bedienen der Normalfunktionen (Geber zugeklappt) ist der Reed-Kontakt geschlossen. Der Tastaturscan an P40 wird somit über P02 vom µC erkannt. In dieser Betriebsart ist der Tastaturscan-Durchlauf verkürzt, da nur für die Bedienebene I und den Schiebeschalter ein Scan über die Tastatur-Ausgangs-Ports ausgegeben werden muß. Für die Betriebsart Textgestaltung und Sendereinstellung ist es erforderlich den Geber aufzuklappen, der Reed-Kontakt öffnet und der Tastaturscan von P40 gelangt nicht an P02. Jetzt werden nur die für die Bedienebenen II und III erforderlichen Tastatur-Ausgangsports beim Tastaturscan-Durchlauf aktiviert. Die Bedienebene I wird, um Fehlfunktionen zu unterbinden nicht angesteuert. In beiden Betriebsarten (zugeklappt und aufgeklappt) wird während des Tastaturscan-Durchlaufs das Port P02 über einen internen Pull up-Widerstand auf +3V gelegt.

### 5. Infrarot-Transmitter

Beim Betätigen einer Taste entscheidet der Mikrocomputer je nach Betriebsart ob das LCD - Display beschrieben wird oder der Infrarot -Sender angesteuert werden soll. Ist letzteres der Fall, erzeugt der Mikrocomputer den der gerade gedrückten Taste entsprechenden 10 Bit Biphase- oder einen 16 Bit Fernbediencode (RCS 16 Code). In der Schalterstellung TV und Video 2 (programmiert auf 10 Bit Biphase-Code; Anzeige im Display "Co 10") arbeitet der Geber im bereits bekannten 10 Bit Biphase-Code. In Schalterstellung Video 1 und Video 2 (Grundstellung nach Reset; Anzeige im Display "Co 16") verwendet man den 16 Bit Fernbediencode (RCS 16 Code).

Aufbau des RCS 16 Codes:

1 Controllbit (Toggle-Bit ändert seinen Inhalt bei jeder Tastenbetätigung)

8 Datenbits (256 verschiedene Funktionen)

7 Systembits (128 verschiedene Gerätesysteme).

Die Trägerfrequenz beträgt wie beim 10 Bit-Biphase-Code 30,3125kHz.

Das Ausgangsport P33 schaltet nun im Rhythmus des geträgerten Fernbedien-Codes nach Low und steuert den Treibertransistor CT 4615 an. Durch die Infrarot-Diode (D 4613) fließt ein im Rhythmus des Fernbedien-Codes getakteter Strom, der in der IR - Diode in eine Infrarot-Strahlung (940nm) umgewandelt wird. Der Widerstand R 4613 begrenzt den Senderstrom der IR-Diode auf einen Wert von ca. 600 mA...700mA.

### 4. Reed-Contact

From this, the Microcomputer identifies which operating mode has been selected from the Transmitter (folded or unfolded). For this a Reed-Contact is fitted to the Transmitter Panel 1 and in the folding part of the cabinet, a small permanent magnet is fitted. When producing commands for normal functions (transmitter folded) the Reed-Contact is closed. The Keyboard Scan on P40 and that via P02 from the Microcomputer is identified. In this Operating Mode the Keyboard Scan Sweep is reduced as only the Operating Level 1 and the Shift Switch needs to be provided with a scan via the Keyboard Output Ports. For the Text Organisation and Station Adjustment Mode, the Transmitter must be unfolded, the Reed-Contact opens and the Keyboard Scan from P40 is not fed to P02. Now only the Keyboard Output Ports for the Operating Modes II and III are activated by the Keyboard Scan Sweep. The Operating Level I is, to prevent incorrect action, stopped. In both Operating Modes (folded and unfolded) during the Keyboard Scan Sweep, Port P02 is connected to +3V via an internal Pull-up Resistor.

### 5. Infrared-Transmitter

When depressing a button the Microcomputer determines whether the LCD Display or the Infrared Transmitter should be activated. If it is the latter case, the Microcomputer generates, from the Button just depressed, an appropriate 10 Bit - Biphase or a 16 Bit Remote Control Code (RCS 16 Code). On the Switch Setting TV and Video 2 (programmed with a 10 Bit Biphase-Code: indication in the display is "Co 10"), the transmitter operates in the conventional 10 Bit Biphase-Code. In the Switch Setting Video 1 and Video 2 (Basic Setting similar to Reset; indication in display "Co 16") the 16 Bit Remote Control Code (RCS 16 Code) is used.

Construction of the RCS 16 Codes:

1 Control Bit (Toggle-Bit alters its content with each press of Button)

8 Data Bits (256 Different Functions)

7 System Bits (128 Different Model Systems).

The Carrier Frequency corresponds, with a 10 Bit Biphase Code, to 30.3125 kHz.

The Output Port P30 now switches in rhythm with the transmitted Remote Control Codes to Low level and drives the transister CT 4615 on. Due to the Infrared Diode (D 4613) a switched current flows through at the same rhythm as the Remote Control Codes. In the IR Diode this is converted into an Infrared Radiation (940 nm). The Resistor R 4613 limits the transmission current of the IR Diode to a value of approx. 600 mA ... 700 mA.

### 4. Contatto Reed

Per far sì che il µC riconosca il tipo di funzionamento scelto sul telecomando (chiuso o aperto), sulla piastra I dello stesso si trova un contatto Reed mentre nella parte apribile è applicato un piccolo magnete permanente. Con il comando delle normali funzioni (telecomando chiuso), il contatto Reed è chiuso. La ricerca effettuata in P40 viene pertanto riconosciuta dal µC attraverso P02. In questo tipo di funzionamento il processo risulta più breve, poichè attraverso la porta d'uscita deve essere emessa una ricerca limitatamente alla sezione di comando I ed al commutatore a slitta. Per le funzioni di creazione dei testi e di regolazione delle emittenti è necessario aprire il telecomando; il contatto Reed quindi si apre e la ricerca da P40 non giunge a P02. A questo punto vengono attivate solo le uscite della tastiera necessarie per le sezioni di comando II e III durante il processo di ricerca. La sezione I non viene comandata per evitare errori di funzione. In entrambi i modi di funzionamento (chiuso e aperto), durante il ciclo di ricerca la porta P02 viene alimentata con +3V mediante una resistenza pull-up interna.

### 5. Trasmettitore ad infrarossi

Dopo la pressione di un tasto, il microcomputer decide a seconda della funzione selezionata, di attivare il display LCD o di comandare il trasmettitore ad infrarossi. In quest'ultimo caso, il microcomputer genera un codice bifase di 10 bit riferito al tasto appena premuto oppure un codice di telecomando di 16 bit (codice RCS 16). In posizione TV e Video 2 (programmata in codice bifase a 10 bit; indicazione nel display "Co 10"), il trasmettitore lavora con il noto codice bifase di 10 bit. In posizione Video 1 e Video 2 (posizione di base dopo reset; indicazione "Co 16") si impiega il codice di telecomando a 16 bit (codice RCS 16).

Conformazione del codice RCS 16:

1 bit di controllo (il bit toggle varia il suo contenuto ad ogni pressione del tasto)

8 bit dati (per 256 funzioni diverse)

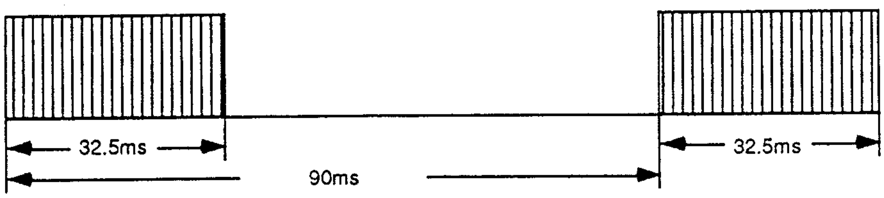
7 bit di sistema (per 128 sistemi di apparecchi diversi).

La frequenza portante è come per il codice bifase di 10 bit pari a 30,3125 kHz. L'uscita P33 commuta in Low al ritmo del codice di telecomando portante e quindi comanda il transistor pilota CT 4615. Attraverso il diodo infrarosso (D 4613) scorre una corrente impulsiva con la cadenza del codice di telecomando, la quale nel diodo stesso viene trasformata in una luce infrarossa (940 nm). La resistenza R 4613 limita la corrente trasmessa dal diodo ad un valore compreso tra 600 mA e 700 mA circa.

Strom durch D 4613

Current through D 4613

Corrente attraverso D 4613



### 6. Umschaltung von 16 Bit-Fernbedien-Code auf 10 Bit-Biphase-Code

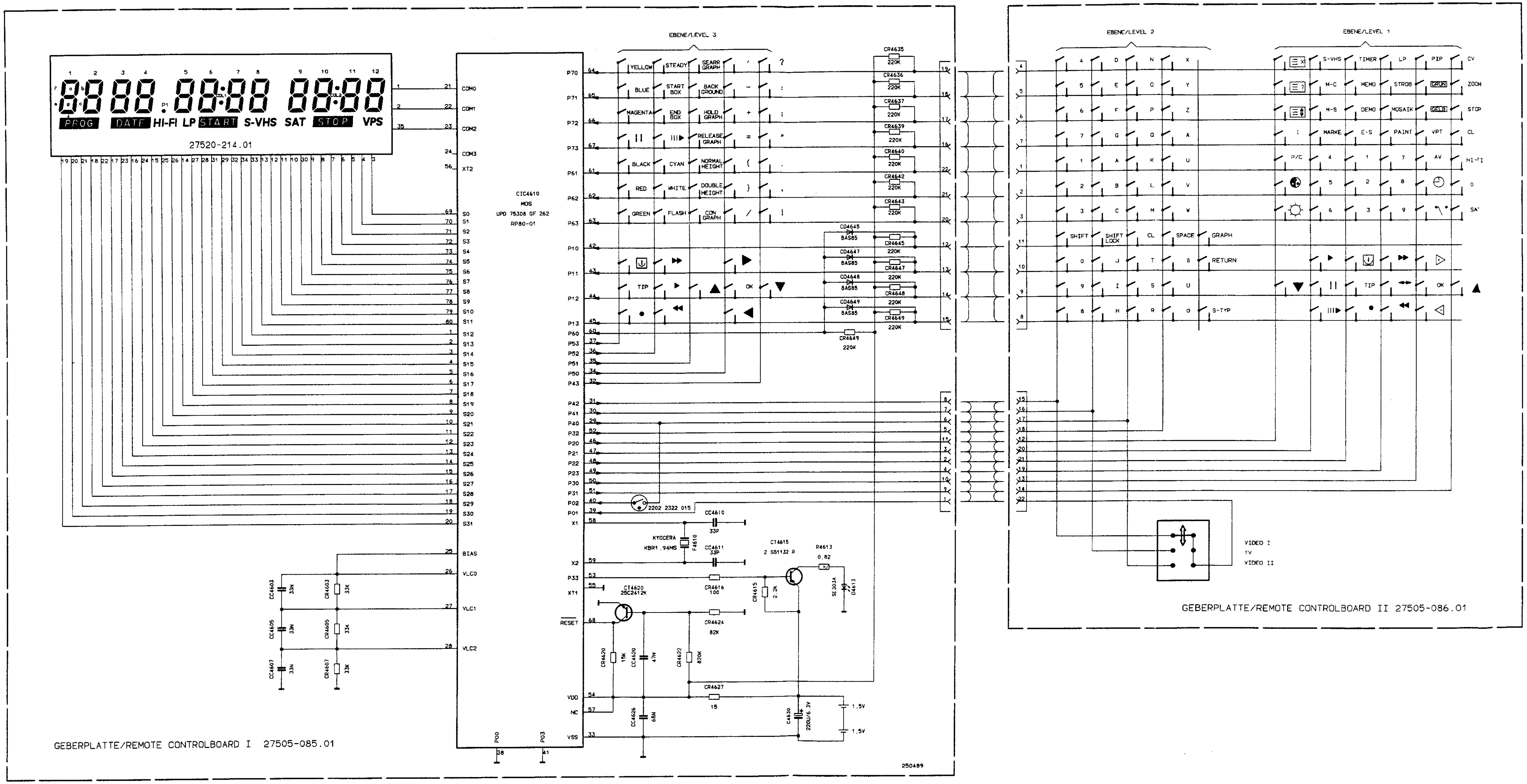
- Schalterstellung **Video 2**
- Taste ☼ drücken (Display zeigt "Co 16")
- Taste \ • drücken (Display zeigt "Co 10")

### 6. Switching Over from the 16 Bit-Remote Control Code to the 10 Bit Biphase Code

- Switch Setting **Video 2**
- Button ☼ depressed (Display shows "Co 16")
- Button \ • depressed (Display shows "Co 10")

### 6. Commutazione codice di telecomando a 16 bit e bifase a 10 bit

- Posizione del commutatore Video 2
- Premere il tasto ☼ (il display indica "Co 16").
- Premere il tasto \ • (il display indica "Co 10").



GEBERPLATTE/REMOTE CONTROLBOARD I 27505-085.01
GEBERPLATTE/REMOTE CONTROLBOARD II 27505-086.01
27520-214.01
PROG
DATE
HI-FI
LP
START
S-VHS
SAT
STOP
VPS
CIC4610
MOS
UPD 75308 GF 262
RP80-01
EBENE/LEVEL 3
EBENE/LEVEL 2
EBENE/LEVEL 1
YELLOW
STEADY
SEARR GRAPH
BLUE
START BOX
BACK GROUND
MAGENTA
END BOX
HOLD GRAPH
RELEASE GRAPH
BLACK
CYAN
NORMAL HEIGHT
RED
WHITE
DOUBLE HEIGHT
GREEN
FLASH
CON GRAPH
TIP
OK
SHIFT
SHIFT LOCK
CL
SPACE
GRAPH
RETURN
S-TYP
S-VHS
TIMER
LP
PIP
CV
M-C
MEMO
STROB
GRÜN
ZOOM
M-S
DEMO
MOSAIK
GELB
STOP
MARKE
E-S
PAINT
VPT
P/C
AV
HI-FI
SAT
VIDEO I
TV
VIDEO II
KYOCERA
KBR1.94MS
2202 2322 015
CC4610 33P
CC4611 33P
CT4615 2 SB1132 R
R4613 0.82
CT4620 2SC2412K
CR4616 100
CR4624 82K
CR4627 15
CR4620 15K
CC4620 47N
CR4622 820K
CC4626 68N
C4630 220U/6.3V
1.5V
1.5V
SE303A
D4613
CR4615 2.2K
CC4603 33N
CR4603 33K
CC4605 33N
CR4605 33K
CC4607 33N
CR4607 33K
CR4635 220K
CR4636 220K
CR4637 220K
CR4639 220K
CR4640 220K
CR4642 220K
CR4643 220K
CD4645 BAS85
CD4647 BAS85
CD4648 BAS85
CD4649 BAS85
CR4649 220K
COM0
COM1
COM2
COM3
XT2
BIAS
VLC0
VLC1
VLC2
RESET
VDD
NC
VSS
X1
X2
XT1
P00
P03
250489

# Fernbedienung
# Remote control
# Telecomando

## Mechanischer Teil

Hinweise:

- Die in Klammern angegebenen Zahlen sind mit den Positionsnummern in den Explosionszeichnungen und Ersatzteillisten identisch.
- Justagemarkierungen:

ⓐ kleine Markierungslöcher
ⓑ große Markierungslöcher
ⓒ Bezugsmarkierung im Laufwerk
ⓓ Markierungsnasen

## Mechanical Section

Notes:

- The numbers quoted in brackets are the same as the position numbers given in the Exploded Diagrams and Spare Parts Lists.
- Alignment marks:

ⓐ Small marked holes
ⓑ Large marked holes
ⓒ Reference mark in the mechanics
ⓓ Marked lugs

## Parte Meccanica

Note:

- I numeri fra parentesi sono identici ai numeri di posizione degli esplosi meccanici e delle liste ricambi.
- Punti di regolazione:

ⓐ fori di piccole dimensioni
ⓑ fori di grandi dimensioni
ⓒ punti di riferimento nella meccanica
ⓓ naselli

### INHALTSVERZEICHNIS

Seite
**1. Mech. Funktionsablauf im Laufwerk 208**
**2. Absenken des Cassettenschachtes von Hand 209**
**3. Cassettenauswurf von Hand 210**
**4. Beobachten des Bewegungsablaufs im Laufwerk 210**
**5. Ausbau des Cassettenschachtes 210**
**6. Einbau des Cassettenschachtes 210 / 211**
**7. Arbeiten am Bandtrommelbaustein 212 / 214**
7.1 Austausch der Kopfscheibe (7) 212
7.2 Reinigen der Kopfscheibe 213
7.3 Austausch des Bandtrommelbausteins (6) 213
7.4 Austausch der Kopfscheiben-Motorsteuerplatte 214
7.5 Austausch des Kopfscheiben-Motorsteuer-IC´s 214
**8. Mechanische Einstellungen 214 - 221**
8.1 Einstellen der Antriebsriemenspannung 214
8.2 Lageeinstellung des Bandzugfühlers 215
8.3 Messen und Einstellen des Bandzuges 216
8.4 Einstellen des Capstanrotors 216
8.5 Höheneinstellung der Wickelteller 217
8.6 Stat. Höheneinstellung der Bandbolzen P2, P3 und P5 217 / 218
8.6.1 Bandführungsbolzen P2, P3 217
8.6.2 Bandauszugsbolzen P5 218
8.6.3 Kontrolle der statischen Höheneinstellung 218
8.7 Bandlaufeinstellung / Kompatibilitätseinstellung 219 - 221
8.7.1 Dynamische Einstellung der Bolzen P2, P3 219
8.7.2 Einstellen der Neigung des A/C-Kopfes 220
8.7.3 Höheneinstellung des A/C-Kopfes 220
8.7.4 Azimuteinstellung des A/C-Kopfes 221
8.7.5 Einstellen der horizontalen Lage des A/C-Kopfes 221
**9. Hinweise zu Reparaturen in der Antriebsmechanik 221 - 225**
9.1 Kurvenrad (112), Ringrad (120), Sperrhebel (110) 222
9.2 Kurvenrad (111), Untersetzungszahnrad (64) 222
9.3 Ladekurvenrad (142), Zwischenrad (114) 222
9.4 Steuerrad (113) 223
9.5 Hauptsteuerschieber (103), Steuerhebel (109) 223

### LIST OF CONTENTS

Page
**1. Sequence of Mechanical Functions 208**
**2. Lowering the Cassette Compartment by Hand 209**
**3. Ejecting the Cassette by Hand 210**
**4. Observing the sequence of movements in the Mechanics 210**
**5. Removing the Cassette Compartment 210**
**6. Refitting the Cassette Compartment 210 / 211**
**7. Working on the Tape Drum Unit 212 / 214**
7.1 Replacing the Head Wheel (7) 212
7.2 Cleaning the Head Wheel 213
7.3 Replacing the Tape Drum Module (6) 213
7.4 Replacing the Head Wheel - Motor Drive Panel 214
7.5 Replacing the Head Wheel - Motor Drive IC 214
**8. Mechanical Adjustments 214 - 221**
8.1 Adjusting the Drive Belt Tension 214
8.2 Adjustment of the Tape Tension Sensor position 215
8.3 Measuring and Adjusting the Tape Tension 216
8.4 Adjustment of Capstan Rotor 216
8.5 Height Adjustment of the Spool Carriers 217
8.6 Static Height Adjustment of the Tape Bolts P2, P3, and P5 217 / 218
8.6.1 Tape Guide Bolts P2, P3 217
8.6.2 Tape Pull-Out Bolt P5 218
8.6.3 Checking the Static Height Adjustment 218
8.7 Tape Transport Adjustment / Compatibility Adjustment 219 - 221
8.7.1 Dynamic Adjustment of the Bolts P2, P3 219
8.7.2 Tilt Adjustment of A/C Head 220
8.7.3 Hight Adjustment of A/C Head 220
8.7.4 Azimuth Adjustment of A/C Head 221
8.7.5 Horizontal Position Adjustment of A/C Head 221
**9. Notes on Repairing the Drive Mechanism 221 - 225**
9.1 Sub Cam Gear (112), Ring Gear (120), Locking Lever (110) 222
9.2 Cam Gear (111), Reduction Toothed Gear (64) 222
9.3 Loading Cam Gear (142), Intermediate Gear (114) 222
9.4 Drive Gear (113) 223
9.5 Main Control Lever (103), Control Lever (109) 223

### INDICE

Pagina
**1. Sequenza delle operazioni meccaniche 208**
**2. Abassamento manuale del vano cassetta 209**
**3. Estrazione manuale della cassetta 210**
**4. Osservazione dei movimenti meccanici 210**
**5. Smontaggio del vano cassetta 210**
**6. Montaggio del vano cassetta 210 / 211**
**7. Intervento sull´unità tamburo nastro 212 / 214**
7.1 Sostituzione della ruota testine (7) 212
7.2 Pulizia della ruota testine 213
7.3 Sostituzione del tamburo nastro (6) 213
7.4 Sostituzione piastra comando motore ruota testine 214
7.5 Sostituzione IC comando motore ruota testine 214
**8. Regolazioni meccaniche 214 - 221**
8.1 Regolazione della tensione della cinghia 214
8.2 Posizionamento della leva tendinastro 215
8.3 Misura e regolazione della tensione nastro 216
8.4 Regolazione del rotore capstan 216
8.5 Regolazione altezza dei piatti di avvolgimento 217
8.6 Regolazione statica dei perni guidanastro P2, P3 e P5 217 / 218
8.6.1 Perni guidanastro P2, P3 217
8.6.2 Perno nel punto d´uscita del nastro P5 218
8.6.3 Controllo della regolazione statica dell´altezza 218
8.7 Regolazione scorrimento nastro / Controllo compatibilità 219 - 221
8.7.1 Regolazione dinamica dei perni P2, P3 219
8.7.2 Regolazione inclinazione testina audio / sincronismo 220
8.7.3 Regolazione altezza testina audio e sincronismo 220
8.7.4 Regolazione azimutale testina audio e sincronismo 221
8.7.5 Regolazione orizzontale testina audio / sincronismo 221
**9. Note di riparazione nella meccanica 221 - 225**
9.1 Ruota a camme (112), ruota ad anello (120), leva di bloccaggio (110) 222
9.2 Ruota a camme (111), ruota dentata (64) 222
9.3 Ruota di caricamento (142), ruota intermedia (114) 222
9.4 Ruota di comando (113) 223

9.6 Laderäder (138, 143), Zahnsegment (141), Bremshebel (105),Spannrollenhebel(108) 224
9.7 Zwischenrad (65) 224
9.8 Funktionswahlschalter (55), P5-Zahnsegment (50) 224
9.9 Rollenhebelantrieb (51), Andruckrolleneinheit (45) 225

9.6 Loading Gears (138, 143), Toothed Segment (141), Brake Lever (105), Tension Roller Lever (108) 224
9.7 Intermediate Gear (65) 224
9.8 Mode Select Switch (55), P5-Toothed Segment (50) 224
9.9 Roller Lever Drive (51), Pressure Roller Assembly (45) 225

9.5 Cursore (103), leva di coman-do (109) 223
9.6 Ruote di caricamento (138, 143), segmento dentato (141), leva freno (105), leva rullo tensore (108) 224
9.7 Ruota intermedia (65) 224
9.8 Selettore di funzioni (55), segmento dentato P5 (50) 224
9.9 Leva rullo (51), rullo premi-nastro (45) 225

### 1. Mech. Funktionsablauf im Laufwerk

Das Flußdiagramm Fig. 1 zeigt den Zusammenhang zwischen Antrieb und den wichtigen Funktionen des Laufwerks. Aus den Pfeilrichtungen in Abbildung Fig. 2 ist die Drehrichtung der Zahnräder im Laufwerk während des Einfädelns ersichtlich.

Symbolerklärung:
○ Funktionsablauf
( ) Positionsnummer in den Explosionszeichnungen und in der Ersatzteilliste

| | | |
|---|---|---|
| ① | (133) | Capstanrotor |
| | (132) | Antriebsriemen |
| ② | (137) | Riemenscheibe |
| ③ | (119) | Antriebsrad |
| ④ | (116) | Kupplungsscheibe |
| ⑤ | (113) | Steuerrad |
| ⑥ | (115) | Planetenrad |
| ⑦ | (120) | Ringrad |
| ⑧ | (112) | Kurvenrad |
| ⑨ | (65) | Zwischenrad |
| ⑩ | (114) | Zwischenrad |
| ⑪ | (111) | Kurvenrad |
| ⑫ | (142) | Ladekurvenrad |
| ⑬ | (141) | Zahnsegment |
| ⑭ | (138) | Laderad (T) |
| ⑮ | (143) | Laderad (S) |

Die Umschaltung zwischen Cassettenschachtsteuerung und Fädelbetrieb erfolgt durch den Sperrhebel (110).

### 1. Sequence of Mechanical Functions

The Flow Chart 1 shows the connection between the drive and the important functions of the mechanics. The direction of rotation of the gear wheels during the tape loading processis indicated by arrows in Fig. 2.

Explanations of symbols:
○ Sequence of operations
( ) Position numbers in the Exploded Diagrams and in the Spare Parts List.

| | | |
|---|---|---|
| ① | (133) | Capstan Rotor |
| | (132) | Drive Belt |
| ② | (137) | Drive Belt Pulley |
| ③ | (119) | Drive gear |
| ④ | (116) | Clutch disk |
| ⑤ | (113) | Drive gear |
| ⑥ | (115) | Planet gear |
| ⑦ | (120) | Ring gear |
| ⑧ | (112) | Sub cam gear |
| ⑨ | (65) | Intermediate gear |
| ⑩ | (114) | Intermediate gear |
| ⑪ | (111) | Cam gear |
| ⑫ | (142) | Loading Cam gear |
| ⑬ | (141) | Toothed segment |
| ⑭ | (138) | Loading gear (T) |
| ⑮ | (143) | Loading gear (S) |

The switch-over between the cassette compartment drive and the loading mode is carried out by the locking lever (110).

### 1. Sequenza delle operazioni meccaniche

Il diagramma di flusso (fig. 1) mostra l´interdipendenza tra complesso meccanico e funzioni più importanti. Le frecce riportate in fig. 2 indicano il senso di rotazione delle ruote dentate nella meccanica durante il caricamento del nastro.

Simboli:
○ sequenza di funzionamento
( ) numero di posizione negli esplosi e nella lista ricambi.

| | | |
|---|---|---|
| ① | (133) | Rotore capstan |
| | (132) | Cinghia di trazione |
| ② | (137) | Puleggia cinghia |
| ③ | (119) | Puleggia di trazione |
| ④ | (116) | Disco frizione |
| ⑤ | (113) | Ruota di comando |
| ⑥ | (115) | Ingranaggio satellite |
| ⑦ | (120) | Ruota ad anello |
| ⑧ | (112) | Ruota a camme |
| ⑨ | (65) | Ruota intermedia |
| ⑩ | (114) | Ruota intermedia |
| ⑪ | (111) | Ruota a camme |
| ⑫ | (142) | Ruota di caricamento |
| ⑬ | (141) | Segmento dentato |
| ⑭ | (138) | Ruota di caricamento (T) |
| ⑮ | (143) | Ruota di caricamento (S) |

La commutazione tra comando vano cassetta e funzioni di caricamento/scaricamento del nastro avviene per mezzo della leva di bloccaggio (110).

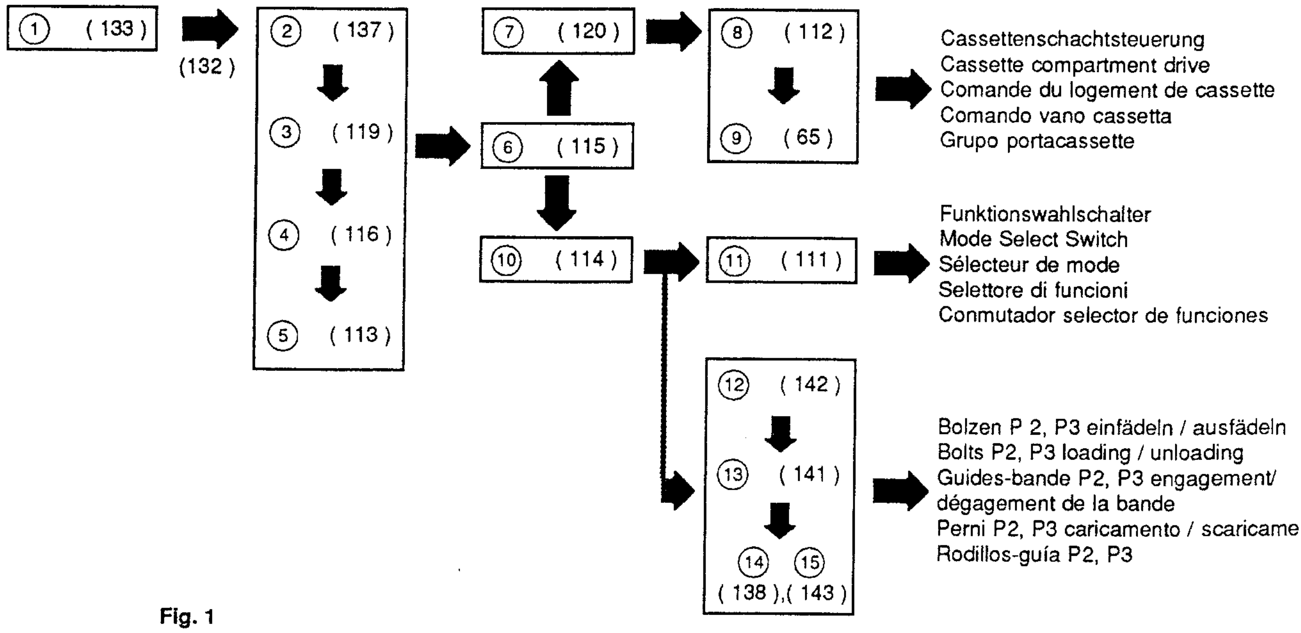


Fig. 1

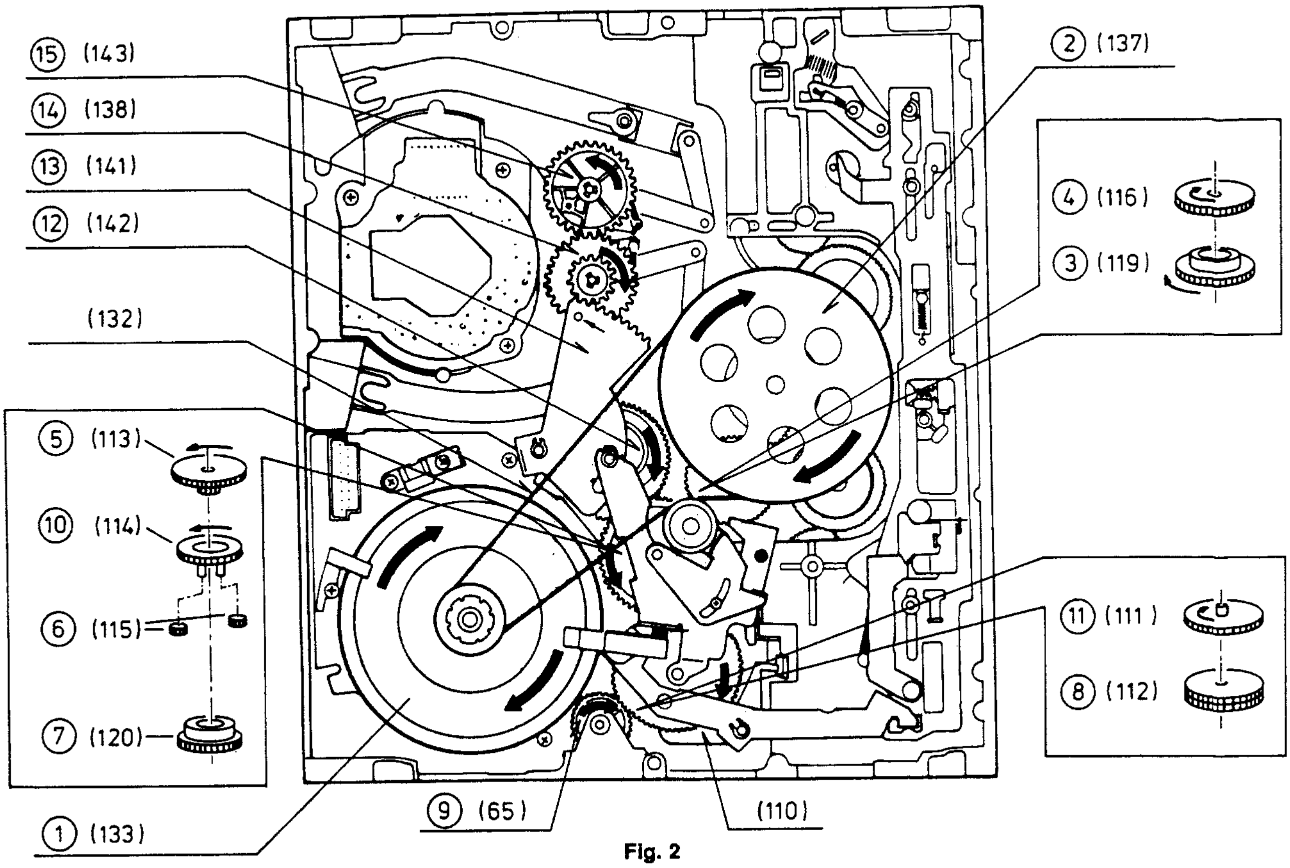


Fig. 2

### 2. Absenken des Cassettenschachtes von Hand (ohne Cassette)

- Netzstecker ziehen.
- Riemenscheibe (137) ca. 3 Umdrehungen im Uhrzeigersinn drehen.
- Sicherungshebel Ⓟ ausrasten (Fig. 3).
- Riemenscheibe (137) um eine Umdrehung weiterdrehen.
- Hebel Ⓠ nach unten drücken und Sicherungshebel Ⓟ erneut ausrasten.
- Cassettenschacht durch Weiterdrehen der Riemenscheibe (137) vollständig absenken

### 2. Lowering the Cassette Compartment by Hand (without cassette)

- Disconnect the machine from mains.
- Rotate the drive belt pulley (137) approx. 3 revolutions in the clockwise directions.
- Release the locking lever Ⓟ (Fig. 3).
- Rotate the drive belt pulley (137) by one more revolution.
- Push the lever Ⓠ down and release the locking lever Ⓟ once again.
- Lower the cassette compartment fully by rotating the drive belt pulley (137) further in a clockwise direction.

### 2. Abbassamento manuale del vano cassetta (senza cassetta)

- Staccare la spina di rete.
- Ruotare la puleggia della cinghia (137) di 3 giri circa in senso orario.
- Sbloccare la leva di sicurezza Ⓟ (fig. 3).
- Ruotare ancora di 1 giro la puleggia (137)
- Premere verso il basso la leva Ⓠ e sbloccare nuovamente la leva Ⓟ.
- Ruotare ulteriormente la puleggia (137) in senso orario fino ad abbassare completamente il vano cassetta.

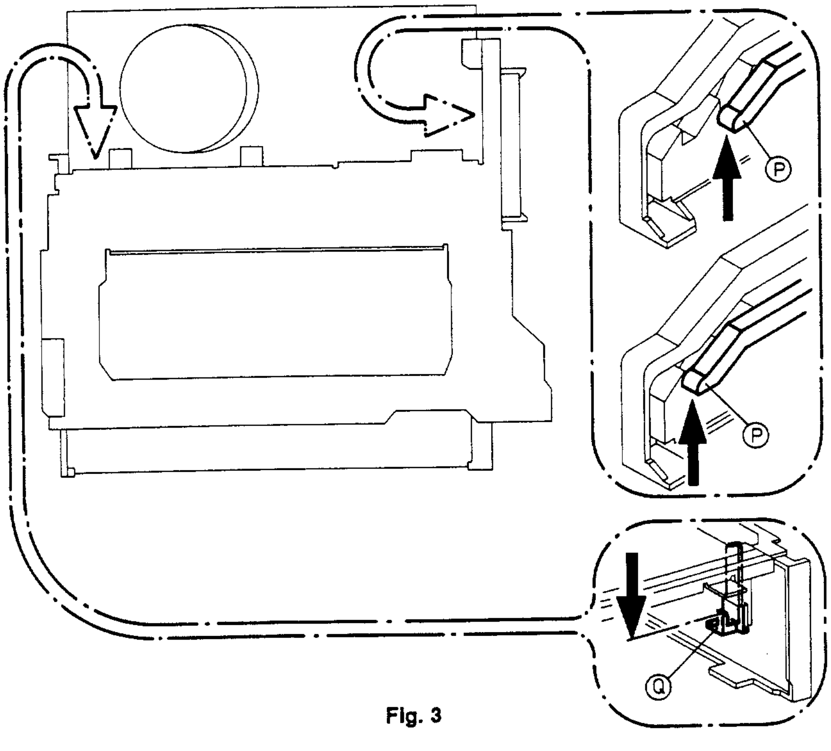


Fig. 3

### 3. Cassettenauswurf von Hand

a) Netzstecker ziehen
b) Umstellhebel (122) durch Drücken in Pfeilrichtung (Fig. 4) ausrasten.
c) Capstanrotor langsam gegen den Uhrzeigersinn drehen, bis die Kupplungsscheibe (116) einrastet.
d) Schritte b) und c) wiederholen bis die Cassette ausgeworfen wird.

### 3. Ejecting the Cassette by Hand

a) Disconnect the machine from the mains.
b) Disengage the change-over lever (122) by pressing it in the direction of the arrow (Fig. 4).
c) Rotate the capstan rotor slowly anti-clockwise until the clutch disk (116) locks.
d) Repeat steps b) and c) until the cassette is ejected.

### 3. Estrazione manuale della cassetta

a) Staccare la spina di rete.
b) Sbloccare la leva (122) premendola nella direzione indicata (fig.4).
c) Girare il rotore capstan lentamente in senso antiorario finchè il disco frizione (116) è bloccato.
d) Ripetere le operazioni b) e c) finchè la cassetta viene espulsa.

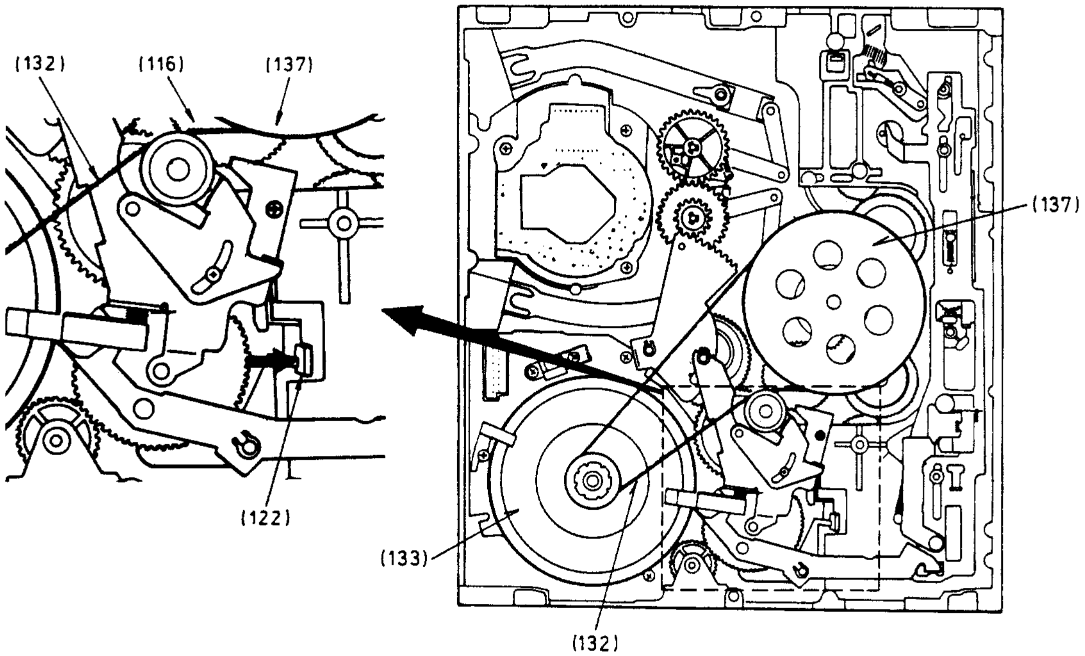


Fig. 4

### 4. Beobachten des Bewegungsablaufes im Laufwerk

Der Capstanmotor arbeitet sowohl als Fädelmotor als auch als Cassettenschachtantrieb. Da die Phasenbeziehung zwischen den Laufwerk- und den Cassettenschachtfunktionen sehr wichtig ist, sollten diese bei Störungen des Ablaufs bei ausgebautem Cassettenschacht beobachtet werden. Dies ist vor allem bei Wiedergabe und den Umspulvorgängen empfehlenswert.

- Netzstecker ziehen.
- Cassettenschacht ausbauen (s. Kap. 5).
- Umstellhebel (122) in Pfeilrichtung drücken (Fig. 4) und Rotor des Capstanmotors solange im Uhrzeigersinn drehen bis die STOP-Position (Fig. 5) erreicht ist. Die STOP-Position ist mit der Position "Umspulen" identisch. Deshalb drehen sich der Aufwickel- und der Abwickelteller abhängig von der Drehrichtung des Capstanrotors.

### 4. Observing the sequence of movements in the machine

The Capstan Motor operates as the loading motor and also as the drive for the cassette compartment. The relationship between the mechanics and the cassette compartment functions is very important, and must be checked as this can be upset with the cassette compartment removed. It is recommended that this is checked before all playback and winding processes are attempted.

- Disconnect the machine from mains.
- Remove the cassette comp. (see para 5).
- Depress the change-over lever (122) in the direction of the arrow (Fig.4) and turn the rotor of the capstan motor in the clockwise direction until the STOP-position (Fig. 5) is reached. The STOP-position is identical to the "Winding" position. Therefore the drive of the take-up or the winding spool carrier depends on the direction of the rotation of the capstan motor.

### 4. Osservazione dei movimenti meccanici

Il motore capstan serve sia come unità di caricamento del nastro che come dispositivo di comando del vano cassetta. Poichè la relazione di fase tra le funzioni della meccanica e quelle del vano cassette è molto importante, esse vanno controllate in caso di disturbi nei movimenti quando il vano è smontato. Ciò è raccomandabile sopratutto in riproduzione ed in avvolgimento veloce.

- Estrarre la spina di rete.
- Smontare il vano cassette (v. cap. 5).
- Premere in direzione della feeccia la leva (122) -fig. 4- e girare il rotore capstan in senso orario finchè èraggiunta la pos. STOP (fig. 5). La leva (122) deve essere sbloccata ad ogni rotazione. La pos. STOP è uguale a quella di avvolgimento veloce. Pertanto, i piattelli avvolgente e svolgente girano dipentemente al verso di rotazione del rotore capstan.

### 5. Ausbau des Cassettenschachts (Fig. 6)

- 2 Schrauben "A" herausdrehen.
- Cassettenschacht durch Drehen des Capstanrotors (133) im Uhrzeigersinn soweit bewegen, bis die 2 Schrauben "B" entfernt werden können.
- Steckverbindung P1508 abziehen und Cassettenschacht herausnehmen.

### 6. Einbau des Cassettenschachtes

- Umstellhebel (122), Fig. 4, oder Kern der Spule (66), Fig. 7, in Pfeilrichtung drücken, um die Verriegelung zu öffnen.

### 5. Removing the Cassette Compartment (Fig.6)

- Remove the 2 screws "A"
- Rotate the capstan rotor (133) to move the cassette compartment so that it is possible to remove the 2 screws "B".
- Pull out the plug-type connector P1508 and remove the cassette compartment.

### 6. Refitting the Cassette Compartment

- Press the change-over lever (122), Fig. 4, or the core of the solenoid (66), Fig. 7, in the

### 5. Smontaggio del vano cassetta (Fig. 6)

- Svitare le due viti "A".
- Ruotando il senso orario il rotore capstan (133) muovere il vano cassetta finchè si possono allontanare anche le due viti "B".
- Staccare il connettore P 1508 ed infine togliere il vano cassette.

### 6. Montaggio del vano cassette

- Premere in direzione della freccia la leva (122), fig. 4, o il nucleo della bobina (66), fig 7, per aprire il dispositivo di bloccaggio.

- Capstanrotor entgegen dem Uhrzeigersinn drehen bis die Mechanik die Stellung "Auswerfen" erreicht hat (Endanschlag).
- Lage des Markierungslochs ⓐ oder der Markierungsnase ⓓ des Zwischenrades (65) merken (Fig. 8) und Capstanrotor entgegen dem Uhrzeigersinn drehen bis das Zwischenrad (65) eine Umdrehung gemacht hat.
- Cassettenschacht (202) soweit verschieben, bis der 2. Zahn der Zahnstange (224) über dem rechtwinkligen Loch "C" liegt (Fig. 9).
- 2 Schrauben "D" herausdrehen und Abdeckplatte (201) entfernen, sodaß die Zahnstange (224) und das Zwischenrad (65) beim Einbau zu sehen sind.
- Cassettenschacht so in das Laufwerk einsetzen, daß der 2. Zahn der Zahnstange (224) in der 5. Zahnlücke des Zwischenrades (65) eingreift (Fig. 10). Gegebenenfalls Cassettenschacht geringfügig verschieben.
- Abdeckplatte (201) montieren und die 6 Schrauben in der Reihenfolge "D", "A", "B" eindrehen (Fig. 6, Fig. 9)
- Steckverbindung P 1508 kontaktieren

**Hinweis:**
Falls die Schachtfunktionen nicht richtig ausgeführt werden, Einbau wiederholen.

direction of the arrow to disengage the lever.
- Rotate the capstan rotor in the anti-clockwise direction until the mechanics reaches the "Eject" position (end stop).
- Note the position of the marking hole ⓐ or the marking lug ⓓ on the intermediate gear (65), Fig. 8, and rotate the capstan rotor in the anti-clockwise direction until the intermediate gear (65) makes one complete revolution.
- Move the cassette compartment (202) so that the 2nd tooth of the toothed rack (224) is positioned over the right ancled hole "C" (Fig. 9).
- Remove the 2 screws "D" and remove the top plate (201) so that the toothed rack (224) and the intermediate gear (65) can be seen during assembly.
- Insert the cassette compartment into the mechanics so that the 2nd tooth of the toothed rack (224) engages with the 5th tooth space of the intermediate gear (65) (Fig. 10). If necessary move the cassette by a small amount.
- Fit the top plate (201) and tighten the 6 screws in the sequence "D", "A", "B" (Fig.6, Fig.9).
- Reconnect the plug connector P1508.

**Note:** If the functions of the cassette compartment are not carried out correctly, repeat the assembly procedure.

- Ruotare in senso antiorario il rotore capstan finchè la meccanica ha raggiunto la posizione prevista per l'espulsione (battuta finale).
- Annotare la posizione del foro ⓐ o del nasello ⓓ della ruota intermedia (65), fig. 8. Girare il rotore capstan in senso antiorario finchè la ruota intermedia (65) ha compiuto un giro.
- Inserire il vano cassetta (202) in modo che il 2° dente della cremagliera (224) risulti sopra il foro "C" (fig. 9).
- Svitare le due viti "D" e togliere la piastra di copertura (201) in modo da rendere visibili la cremagliera (224) e la ruota intermedia (65) durante il montaggio.
- Inserire il vano cassetta nella meccanica in modo che il 2° dente della cremagliera (224) ingrani in correspondenza del dente della ruota intermedia (65) indicato in fig. 10. Even. te muovere leggermente il vano cassetta.
- Montare la piastra di copertura (201) e fissare le sei viti "D", "A" e "B" (figg. 6 e 9).
- Collegare il connettore P 1508.

**Nota:**
Se le funzioni del vano non vengono eseguite correttamente, ripetere le varie operazioni di montaggio.

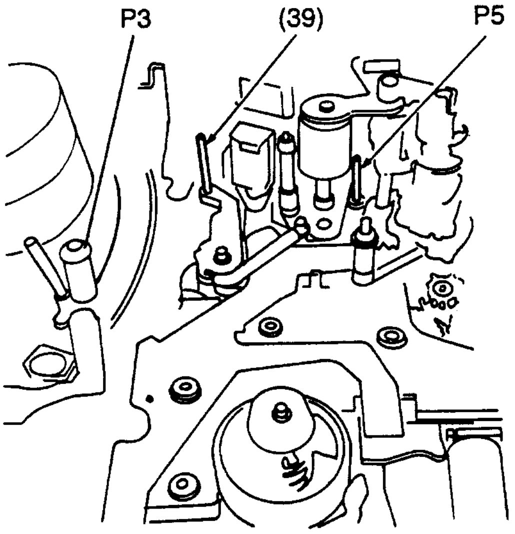


Fig. 5

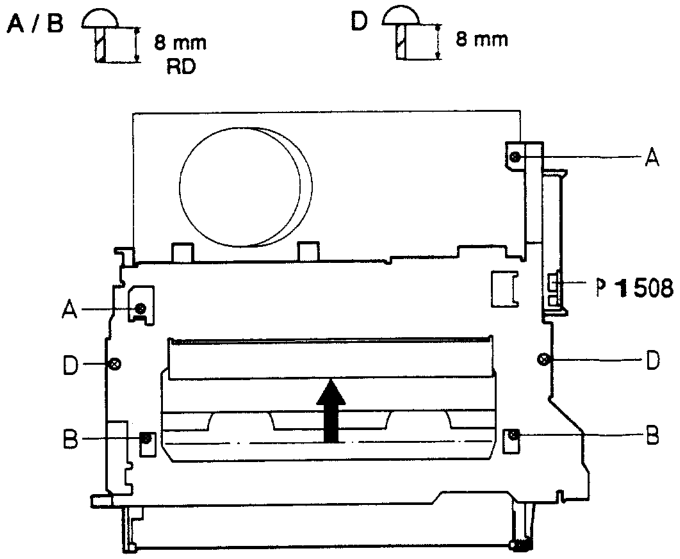


Fig. 6

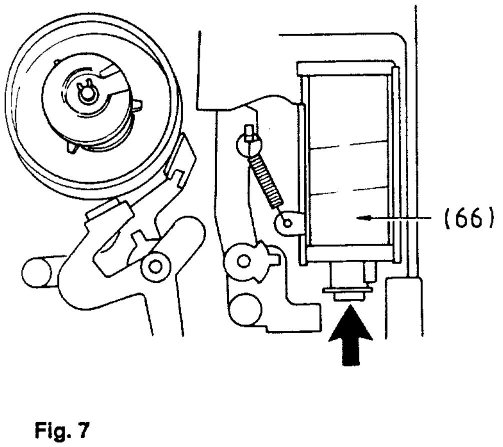


Fig. 7

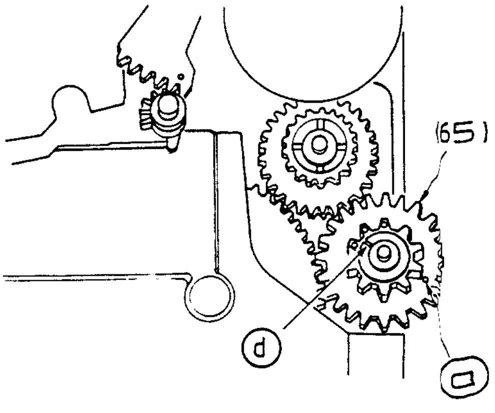


Fig. 8

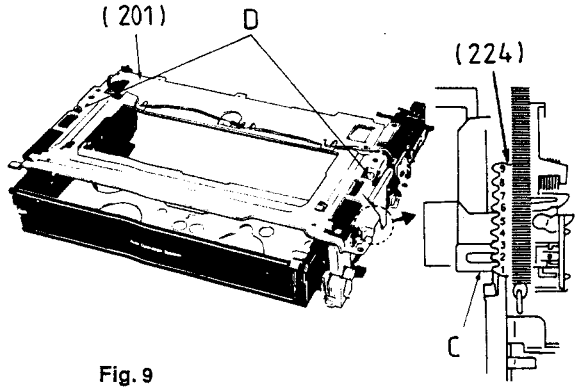


Fig. 9

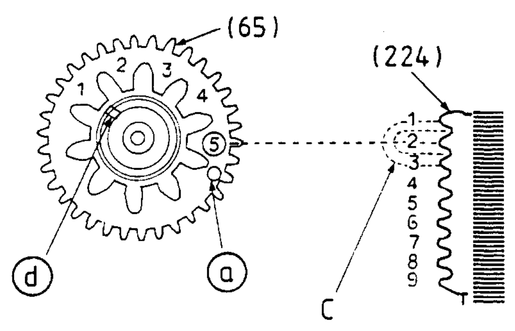


Fig. 10

## 7. Arbeiten am Bandtrommelbaustein

### 7.1 Austausch der Kopfscheibe (7)

**Servicemittel:** Kopfscheibenabzieher

**Achtung:**

- Die Kopfscheibe sitzt sehr fest auf der Antriebsachse. Arbeiten Sie deshalb mit äußerster Sorgfalt und berühren Sie die Videoköpfe nicht!
- Wenn sich nach dem Einbau die weißen Flächen "M" (Fig. 15) nicht decken, erfolgt die Wiedergabe vorher durchgeführter Aufnahmen in Schwarz / Weiß!
- Die 3 Schrauben "I" nicht lösen (Fig. 11)!

**Ausbau:**

- Schrauben "F", "H" herausdrehen und Erdungsfeder (5) entfernen (Fig. 12 / Fig. 13).
- Kopfscheibenanschlüsse "K" entlöten, Außenring der Kopfscheibe (7) leicht anwärmen (z.B. Fön) und Kopfscheibe (7) vorsichtig abziehen (Fig. 13). Gegebenenfalls Kopfscheiben-Abziehvorrichtung verwenden (Fig. 14). Hierzu die Abziehvorrichtung in den Gewindelöchern "L" der Kopfscheibe befestigen und den Handgriff im Uhrzeigersinn drehen bis die Kopfscheibe von der Achse abgezogen ist.

**Einbau:**

- Kopfscheibe (7) so auf die Antriebsachse stecken, daß sich die weißen Flächen "M" decken (Fig. 15).
- Schrauben "H" eindrehen und Erdungsfeder (5) montieren.
- Kopfscheibenanschlüsse "K" anlöten.

## 7. Working on the Tape Drum Module

### 7.1 Replacing the Head Wheel (7)

**Service Aid:** Head Wheel Extractor

**Attention:**

- The Head Wheel is fitted very tightly onto the drive shaft. Therefore, when carrying out service work be very careful and especially ensure that the video heads are not touched!
- If, after reassembly, the white areas "M" (Fig. 15) do not coincide, previous recordings on the tape will be reproduced on playback in black and white!
- Do not loosen the 3 screws "I" (Fig. 11)

**Removing:**

- Remove the screws "F" and "H" and then the earthing spring (5) (Fig. 12/13).
- Unsolder the head wheel connections "K". Warm up the outer ring of the head wheel (e.g. Hairdryer) and pull the head wheel (7) off carefully.
- If necessary use the head wheel extractor (Fig. 14). For this locate the extractor into the holes "L" drilled in the head wheel and rotate the handle in the clockwise direction until the head wheel is pulled off the shaft.

**Refitting:**

- Fit the head wheel (7) onto the shaft so that the white areas "M" coincide (Fig. 15).
- Refit the screws "H" and the earthing spring (5) with screw "F".
- Resolder the head wheel connections "K".

## 7. Interventi sull'unità tamburo nastro

### 7.1 Sostituzione della ruota testine (7)

**Attrezzatura:** chiave spec. per ruota testine

**Attenzione:**

- La ruota testine risulta fortemente vincolata al perno di guida. Procedere quindi con cautela e non toccare le testine video!
- Se dopo il montaggio le superfici bianche "M" (fig. 15) non risultano sovrapposte, le immagini precedentemente registrate vengono riprodotte in bianco / nero!
- Non allentare le tre viti "I" (fig. 11).

**Smontaggio:**

- Svitare le viti "F" e "H" (figg. 12 e 13). Togliere la molla di massa (5).
- Aprire i punti di saldatura "K" e riscaldare leggermente con un phon l'anello esterno della ruota testine (7). Sollevare attentamente la ruota testine (7) -(fig. 13). Eventualmente impiegare la chiave speciale illustrata in fig. 14, fissandola nei fori "L" e ruotandola in senso orario fino a staccare la ruota testine dal perno.

**Montaggio:**

- Inserire la ruota testine (7) nel perno di guida in modo che le superfici bianche "M" risultino coincidenti (fig. 15).
- Fissare le viti "H".
- Saldare i collegamenti "K" della ruota testine.

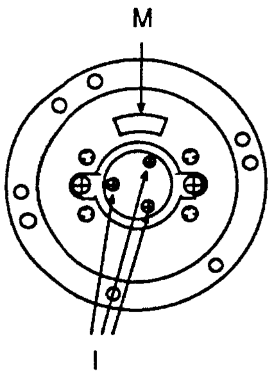


Fig. 11

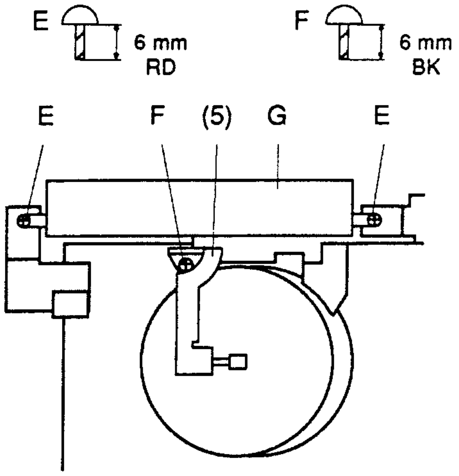


Fig. 12

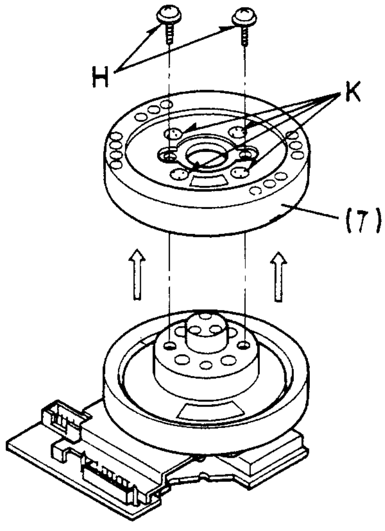


Fig. 13

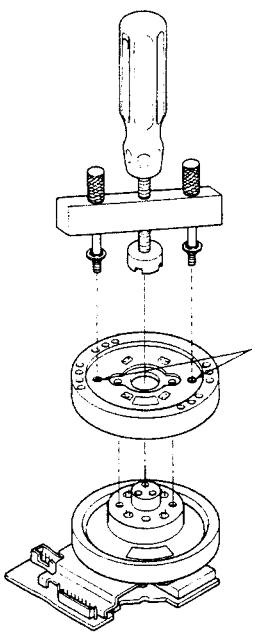


Fig. 14

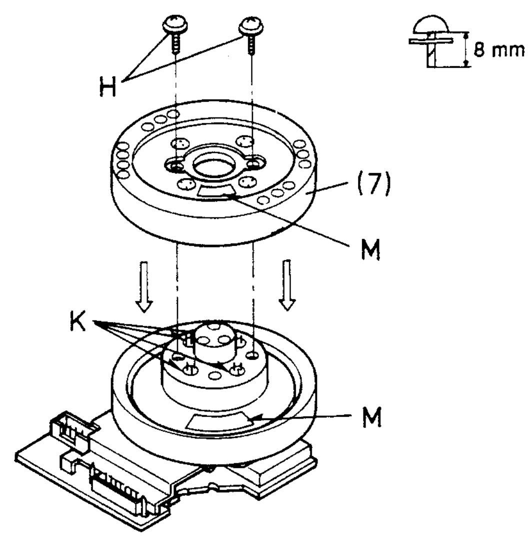


Fig. 15

**7.2. Reinigen der Kopfscheibe**

- Kopfscheibe festhalten und Videoköpfe mit einem Reinigungsstäbchen in Bandlaufrichtung vorsichtig abreiben (Fig.16).

**7.2. Cleaning the Head Wheel**

- Hold the head wheel stationary and clean the video heads with a cleaning stick in the direction of the tape direction very carefully (Fig.16).

**7.2. Pulizia della ruota testine**

- Tenere ferma la ruota testine e con un bastoncino detergente pulire attentamente le testine video nel verso di scorrimento del nastro (Fig.16).

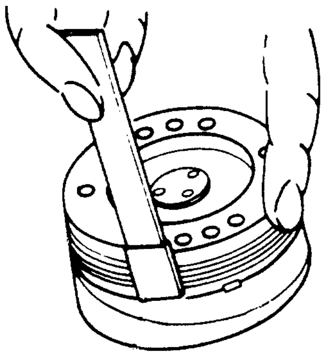


Fig. 16

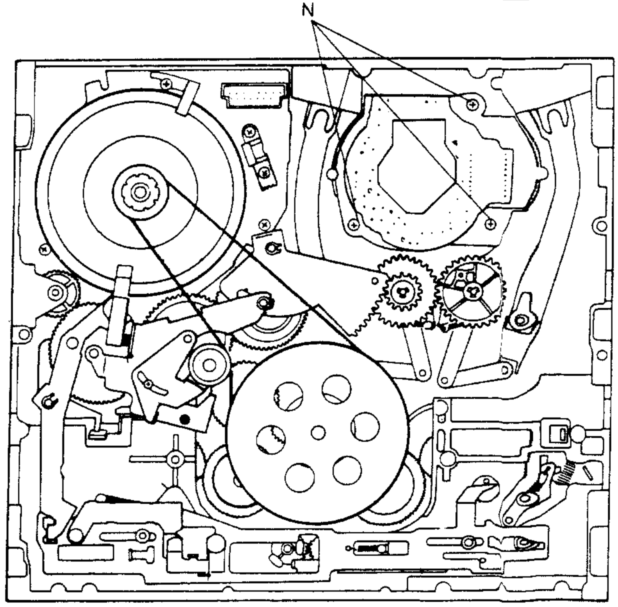


Fig. 17

**7.3 Austausch des Bandtrommelbausteins**
**Ausbau des Bandtrommelbausteins (6)**

- 3 Schrauben "E" und "F" herausdrehen (Fig. 12).
- Kopfverstärker "G" und Erdungsfeder (5) entfernen.
- Steckverbindungen lösen.
- 3 Schrauben "N" entfernen (Fig. 17) und Bandtrommelbaustein (6) vorsichtig aus dem Laufwerk ziehen.

**Einbau des Bandtrommelbausteins (6)**

- Bandtrommelbaustein (6) ins Laufwerk stecken und 3 Schrauben "N" eindrehen (Fig. 17).
- Erdungsfeder (5) mit Schraube "F" befestigen (Fig. 12).

**7.3 Replacing the Tape Drum Module**
**Removing the Tape Drum Module (6)**

- Remove the 3 screws "E" and "F" (Fig. 12).
- Remove the head amplifier "G" and the earthing spring (5).
- Loosen the plug connectors.
- Remove the 3 screws "N" (Fig. 17) and pull the Tape Drum Module (6) carefully out of the mechanics.

**Refitting the Tape Drum Module (6)**

- Place the Tape Drum Module (6) into the mechanics and tighten the 3 screws "N" (Fig. 17).
- Refit the earthing spring (5) with the screw "F" (Fig. 12).
- Reconnect the Head Amplifier "G" and the

**7.3 Sostituzione del tamburo nastro (6)**
**Smontaggio**

- Svitare le tre viti "E" e "F" (fig.12).
- Togliere l'amplificatore delle testine "G" e la molla di masse (5).
- Staccare il connettori.
- Togliere le tre viti "N" (fig. 17) ed estrarre il tamburo nastro (6) dalla meccanica.

**Montaggio**

- Inserire il tamburo nastro (6) nella meccanica ed avvitare le tre viti "N" (fig. 17).
- Fissare la molla di massa (5) con la vite "F" (fig. 12).
- Collegare l'amplificatore testine "G" ed il connettori che sono stati precedentamente staccati.

- Kopfverstärker "G" und Steckverbindungen kontaktieren.
- 2 Schrauben "E" eindrehen.
- Bandlauf- / Kompatibilitätseinstellung prüfen (Kap. 8.7)

### 7.4 Austausch der Kopfscheiben-Motorsteuerplatte

- Bandtrommelbaustein gemäß Kap. 7.3 ausbauen.
- Lötstelle "O" öffnen und Abschirmung entfernen (Fig. 18).
- 18 Lötstellen "R", einschließlich der 10 in der Abbildung Fig. 18 nicht sichbaren, öffnen.
- 2 Schrauben "S" herausdrehen und Kopf-Scheiben-Motorsteuerplatte entfernen.

Der Einbau erfolgt in umgekehrter Reihenfolge.

### 7.5 Austausch des Kopfscheiben-Motorsteuer-IC's

- Kopfscheiben-Motorsteuerplatte gemäß Kapitel 7.4 ausbauen.
- Schraube "T" (Fig. 19) und Kühlblech entfernen.
- IC auslöten.

Der Einbau erfolgt in umgekehrter Reihenfolge.

plug connectors.
- Refit the 2 screws "E".
- Check the Tape Transport/Compatibility Adjustment (para 8.7)

### 7.4 Replacing the Head Wheel-Motor Drive Panel

- Remove the Tape Drum Module as described in para 7.3.
- Unsolder the solder pads "O" and remove the screen (Fig. 18).
- Open the 18 solder connections "R" including the 10 not visible in the illustration (Fig. 18).
- Undo the 2 screws "S" and remove the Head Wheel-Motor Drive Panel.

For reassembly, reverse the sequence.

### 7.5 Replacing the Head Wheel-Motor Drive IC

- Remove the Head Wheel-Motor Drive Panel as described in para 7.4.
- Release the screw "T" (Fig. 19) and the heat sink.
- Unsolder the IC.

For reassembly, reverse the sequence.

- Avvitare le due viti "E".
- Controllo scorrimento nastro / compatibilità secondo il capitolo 8.7.

### 7.4 Sostituzione piastra comando motore routa testine

- Smontare il tamburo nastro come al capitolo 7.3.
- Aprire il punto di saldatura "O" e togliere lo schermo (fig. 18).
- Aprire i 18 punti di saldatura "R" compresi i 10 non visibili in fig. 18.
- Svitare le due viti "S" ed estrarre la piastra comando del motore ruota testine.

Il montaggio avviene in senso inverso.

### 7.5 Sostituzione IC comando motore ruota testine

- Smontare la piastra di comando del motore ruota testine come al capitolo 7.4.
- Allontanare la vite "T" (fig. 19) ed il lamierino di raffreddamento.
- Dissaldare l'integrato.

Il montaggio avviene in senso inverso.

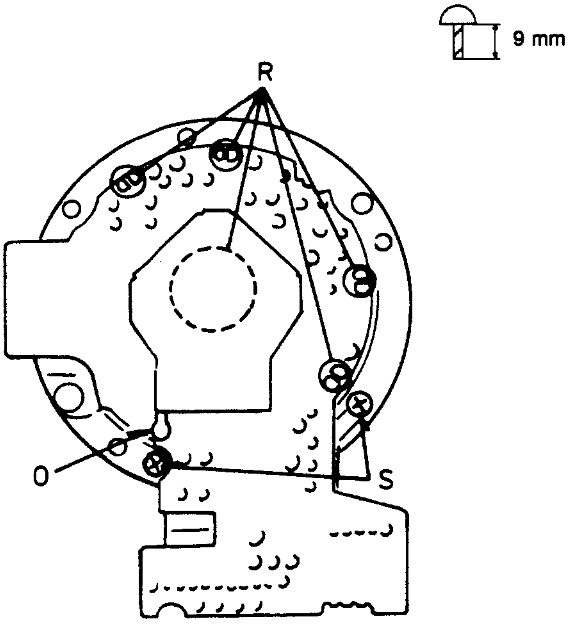


Fig. 18

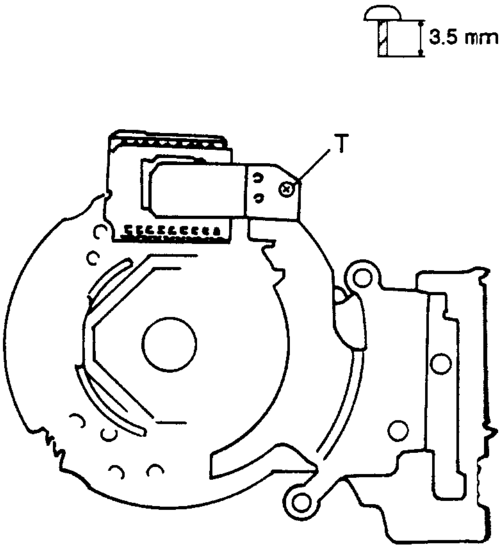


Fig. 19

## 8. Mechanische Einstellungen

### 8.1 Einstellen der Antriebsriemenspannung

Meßmittel: Kontaktor (0,1N - 1N)

- Schraube "U" lösen (Fig. 20).
- Kontaktor am Punkt "V" ansetzen und Spannrollenhebel (108) in Pfeilrichtung "V" drücken.
- Zeigt die Skala des Kontaktors 0,4 N ± 0,05 N (Einstellwert) an, Schraube "U" anziehen.

## 8. Mechanical Adjustments

### 8.1 Adjusting the Drive Belt Tension

Service Aid: Tension gauge (0.1N - 1N)

- Loosen the screw "U" (Fig. 20)
- Fit the Tension Gauge to point "V" and press the tension roller lever (108) in the direction of the arrow "V".
- When the Tension Gauge indicates 0.4 N ± 0.05 N (Specified Value), tighten the screw "U".

## 8. Regolazioni meccaniche

### 8.1 Regolazione della tensione della cinghia

Attrezzatura: Dinamometro (0,1N - 1N)

- Allentare la vite "U" (fig. 20).
- Accostare il dinamometro al punto "V" e premere la leva di pressione (108) verso "V.
- Se il valore segnato sul dinamometro è 0,4 N ± 0,05 N, riavvitare la vite "U".

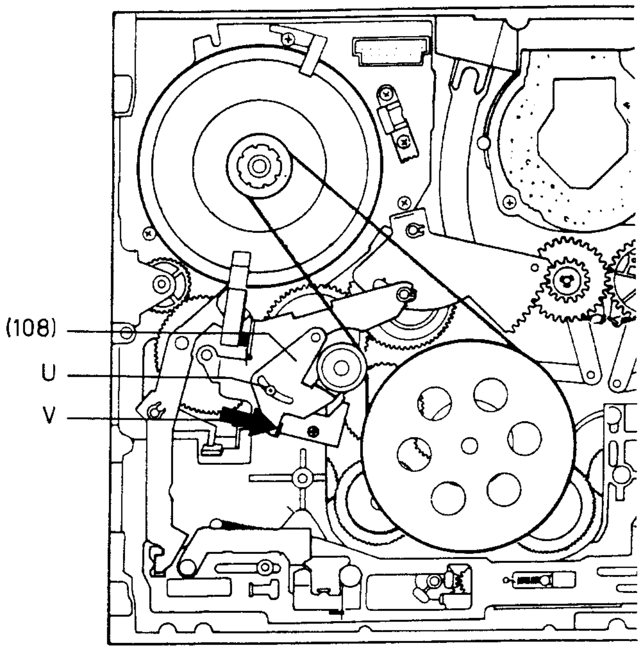


Fig. 20

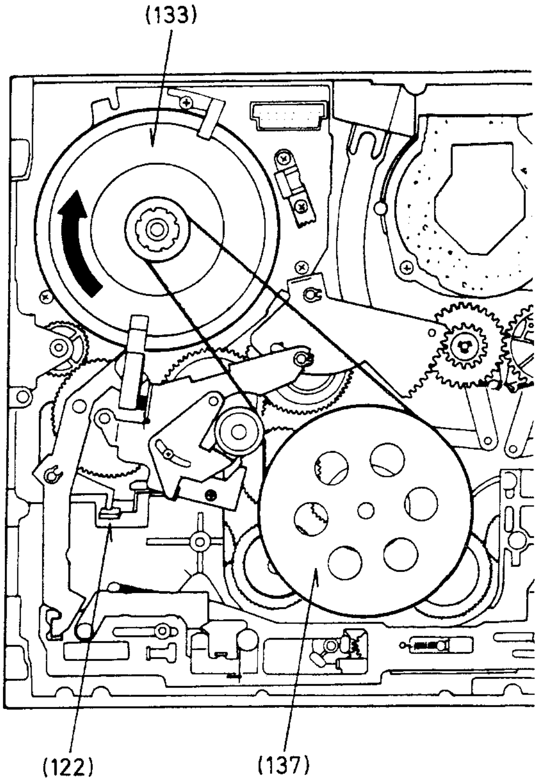


Fig. 21

### 8.2 Lageeinstellung des Bandzugfühlers

Meßmittel:
Referenzplatte
Sechskantstiftschlüssel 2mm

- Gerät vom Netz trennen
- Cassettenschacht ausbauen ( Kap. 5)
- Umstellhebel (122) drücken und Capstanrotor (133) im Uhrzeigersinn drehen bis der Einfädelvorgang abgeschlossen ist (Fig. 21).
- Referenzplatte auflegen
- Exzenter "W" der Bremsbandbefestigung mit dem Sechskantstiftschlüssel so einstellen, daß der Bandzugbolzen "X" gerade die Referenzplatte berührt (Fig. 22).
- Referenzplatte entfernen und Capstanrotor (133) solange entgegen dem Uhrzeigersinn drehen, bis ausgefädelt ist.
- Cassettenschacht einbauen ( Kap. 6).

### 8.2 Adjustment of the Tape Tension Sensor position

Service Aid:
Tension post adjustment plate
Hexagon Wrench (Allen Key) 2mm

- Disconnect the recorder from the mains.
- Remove the cassette compartment (para 5)
- Press the change-over lever (122) and rotate the capstan rotor (133) in the clockwise direction until the loading in process is completed (Fig. 21)
- Fit the Tension Post Adjustment Plate.
- Adjust the cam "W" on the brake band securing point with the hexagon wrench so that the tape tension bolt "X" just touches the Tension Post Adjustment Plate (Fig. 22).
- Remove the Tension Post Adjustment Plate and rotate the capstan rotor (133) in the anticlockwise direction until the mechanics unloads.
- Refit the cassette compartment (para 6).

### 8.2 Regolazione della leva tendinastro

Attrezzatura:
piastra di riferimento
chiave esagonale da 2 mm

- Staccare l'apparecchio dalla rete.
- Smontare il vano cassette (cap. 5).
- Premere la leva (122) e ruotare in senso orario il rotore capstan (133) finchè la fase di caricamento del nastro è conclusa (fig. 21).
- Inserire la piastra di riferimento.
- Mediante la chiave esagonale regolare l'eccentrico "W" del freno nastro finchè il perno "X" sfiora la piastra di riferimento (fig. 22).
- Togliere la piastra di riferimento e ruotare in senso antiorario il rotore capstan (133) finchè il nastro è scaricato.
- Rimontare il vano cassette (cap. 6).

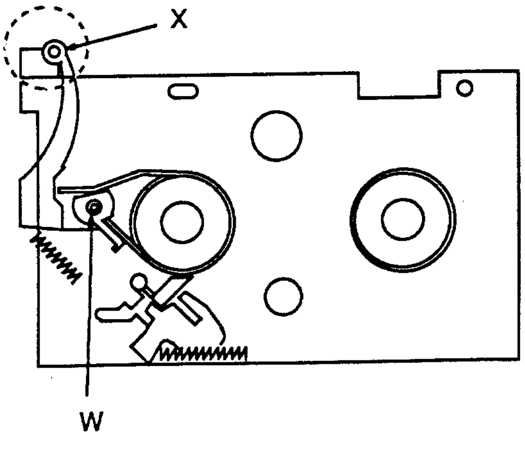


Fig. 22

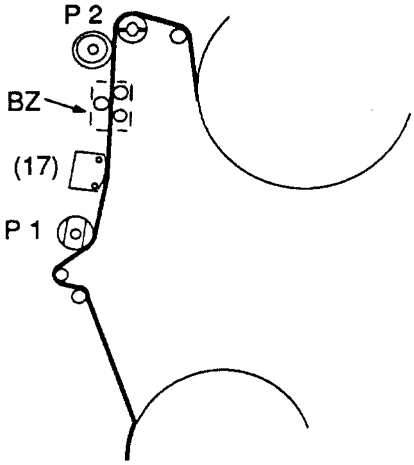


Fig. 23

### 8.3 Messen und Einstellen des Bandzuges

Meßmittel:
Bandzugmesser, A/W-Cassette E 120

- A / W-Cassette E 120 vom Bandanfang an abspielen
- Nach ca. 20 Sekunden den Bandzugmesser "BZ" nach Fig.23 in den Bandlauf einfügen.
- Weicht der abgelesene Bandzug vom Sollwert 0,2N ... 0,25N ab, den Bandzug durch Umhängen der Feder (12) auf den Sollwert einstellen (Fig. 24).

**Hinweis:** Während der Messung müssen die Fühler des Bandzugmessers guten Kontakt zum Band haben. Messung mehrmals wiederholen.

### 8.3 Measuring and Adjusting the Tape Tension

Service Aids:
Tape tension meter
Record / Playback cassette E120

- Playback the R/P Cassette E120 from the beginning.
- After about 20 seconds fit the Tape Tension Meter "BZ" as shown in Fig. 23.
- If the measured value is different from the specified value of 0.2N ... 0.25N, relocate the spring (12) to obtain the specified value (Fig. 24).

**Note:** When making measurements, ensure that the probes of the meter are in good contact with the tape. Repeat this measurement several times.

### 8.3 Misura e regolazione della tensione del nastro

Attrezzatura:
misuratore di tensione, cassetta A/W - E 120

- Riprodurre questa cassetta dall'inizio.
- Dopo ca. 20 sec., accostare il misuratore "BZ" al nastro che scorre come indicato in fig. 23.
- Se il valore misurato si scosta da quello nominale (0,2N ... 0,25N), correggere la tensione del nastro spostando in un'altra tacca la molla (12), fig. 24.

**Nota:** Accertarsi che i sensori del misuratore di tensione siano perfettamente a contatto col nastro. Ripetere più volte questa misura.

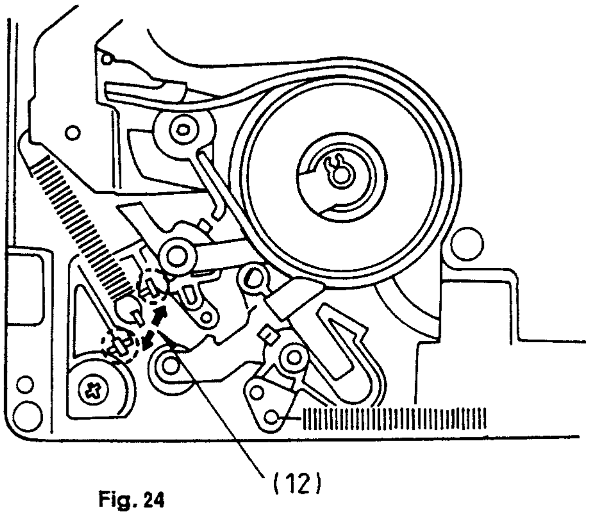


Fig. 24

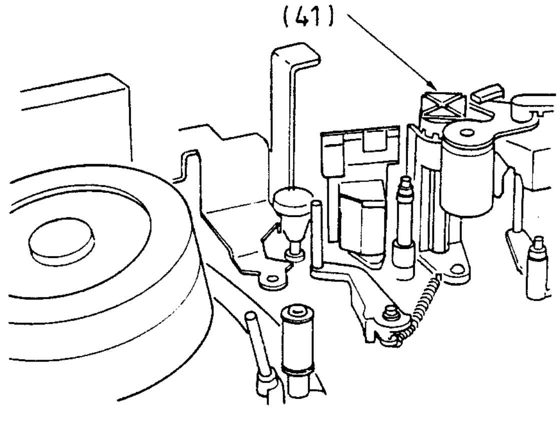


Fig. 25

### 8.4 Einstellen des Capstanrotors (133)

Meßmittel:
Höhenmeßuhr, Höhenlehre

- Einstellschraube (41) ,Fig. 25, soweit herausdrehen,bis sich Capstanstator (135) und -rotor (133) gerade berühren.
- Höhenlehre "Y" auf den Capstanrotor (133) legen und Höhenmeßuhr nach Abbildung Fig. 26 auf dem geschliffenen Laufwerkrand positionieren. Skala der Höhenmeßuhr auf Null stellen.
- Mit der Einstellschraube (41) Abstand zwischen Capstanrotor (133) und -stator (135) auf 0,5 mm...0,55 mm einstellen (Fig. 27).

### 8.4 Adjusting the Capstan Rotor (133)

Service Aids:
Dial Height Gauge, Height Gauge

- Loosen the adjustment screw (41), Fig. 25, until the capstan stator (135) just touches the rotor (133).
- Place the Height Gauge "Y" onto the capstan rotor (133) and the Dial Height Gauge as shown in Fig. 26 onto the smooth area on the edge of the mechanics. Set the pointer of the Dial Height Gauge to zero.
- With the adjustment screw (41) adjust the distance between the capstan rotor (133) and the stator (135) to 0.5mm...0.55mm (Fig. 27).

### 8.4 Regolazione del rotore capstan (133)

Attrezzatura:
misuratore dell'altezza, spessore

- Svitare la vite di regolazione (41), fig. 25, finchè lo statore (135) sfiora il rotore (133).
- Appoggiare lo spessore "Y" sul rotore (133) ed il misuratore d'altezza sulla meccanica come indicato in fig. 26. Regolare lo strumento a "0".
- Regolare la vite (41) finchè tra il rotore (133) e lo statore (135) risulta una distanza di 0,5 mm...0,55 mm (fig. 27).

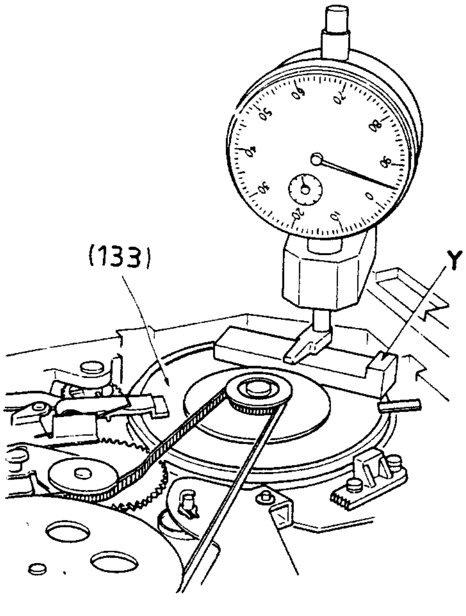


Fig. 26

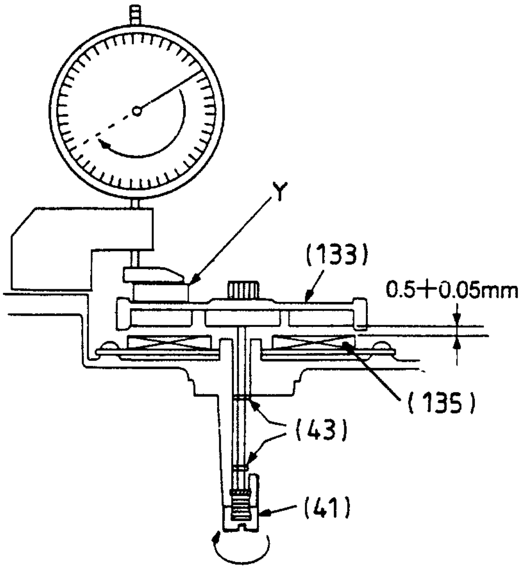


Fig. 27

### 8.5 Höheneinstellung der Wickelteller

Meßmittel:
Einstellplatte, Höhenmeßuhr

- Cassettenschacht ausbauen (Kap. 5).
- Einstellplatte auf die Wickelteller legen.
- Höhenmeßuhr so auf die Einstellplatte legen, daß der Meßfuß der Höhenmeßuhr im ausgearbeiteten Teil der Einstellplatte aufsitzt (Fig. 28).
- Skala der Höhenmeßuhr auf Null stellen
- Höhe der Wickelteller (14), (71) messen (Fig. 29).
- Wenn der gemessene Wert mehr als ± 0,2 mm vom eingestellten Nullwert der Skala abweicht, Wickeltellerhöhe durch Austauschen der Unterlegscheiben einstellen. Folgende Unterlegscheiben sind lieferbar:

### 8.5 Height Adjustment of the Spool Carries

Service Aid:
Post Adjustment Plate, Dial Height Gauge

- Remove the cassette compartment (para 5)
- Place the Post Adjustment Plate onto the spool carrier.
- Place the Dial Height Gauge onto the Post Adjustment Plate so that the measuring probe of the Dial Height Gauge locates into the cut-out provided on the Post Adjustment Plate (Fig. 28).
- Set the pointer of the Dial Hight Gauge to zero.
- Measure the height of the spool carrier (14), (71)- (Fig. 29).
- If the measured value differs from the zero Value of the pointer by more than ±0.2mm, readjust the spool carrier height by replacing the shim washer. The following shim washers are available:

### 8.5 Regolazione dell'altezza dei piatti di avvolgimento

Attrezzatura:
piastra di regolazione, misuratore d'altezza

- Smontare il vano cassette (cap. 5).
- Accostare al piatto la piastra di regolazione.
- Appoggiare il misuratore sulla piastra di regolazione in modo che il sensore del misuratore stesso tocchi la parte intagliata della piastra (fig. 28).
- Tarare il misuratore per il valore "0".
- Misurare l'altezza dei piatti di avvolgimento (14) e (71), fig. 29
- Se la differenza del valore misurato è superiore a 0,2 mm rispetto al valore "0" regolato sul misuratore, ritoccare l'altezza del piatto utilizzando le rondelle qui elencate:

| Unterlegscheibe / Washer / Rondella | Sachnummer / Part Number / No. ordine |
|---|---|
| 0,2 mm | 75 986 - 208 . 21 |
| 0,3 mm | 75 986 - 208 . 22 |
| 0,5 mm | 75 986 - 208 . 23 |

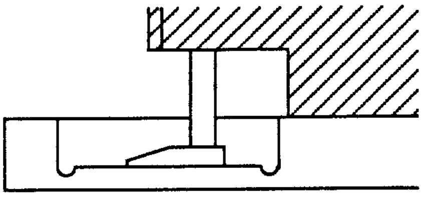


Fig. 28

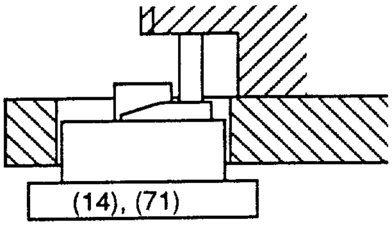


Fig. 29

### 8.6 Statische Höheneinstellung der Bandbolzen P2,P3 und P5

Meßmittel:
Einstellplatte, Höhenmeßuhr
Einstellschraubendreher

**Vorbereitung:**

- Cassettenschacht ausbauen (Kap. 5)
- Einstellplatte nach Abbildungen Fig. 30 / 33 auf die Wickelteller legen.

#### 8.6.1 Bandführungsbolzen P2, P3

- Höhe der Bandführungsbolzen P2,P3 so einstellen, daß der untere Führungsbund unter der Oberkante der Einstellplatte liegt (Fig. 31)
- Höhenmeßuhr nach Abbildung Fig. 31 plazieren und Bandführungsbolzen soweit hochdrehen, bis der untere Führungsbund gerade den Meßfühler der Höhenmeßuhr berührt (Fig. 32).
- Schraube "Z" nicht lösen! Sie dient zur Neigungseinstellung der Führungsbolzen P2, P3.

### 8.6 Static Height Adjustment of Tape Bolts P2, P3 and P5

Service Aids:
Post Adjustment Plate, Dial Height Gauge
Post Adjustment screw driver

**Preparations:**

- Remove the cassette compartment (para 5)
- Place the Post Adjustment Plate onto the spool carrier as shown in Fig. 30 / 33.

#### 8.6.1 Tape Guide Bolts P2, P3

- Adjust the height of the Tape Guide Bolts P2, P3 so that the lower guide collar lies below the upper edge of the Post Adjustment Plate (Fig. 31).
- Place the Dial Height Gauge as shown in Fig. 31 and adjust to raise the hight of the Tape Guide Bolts so that the lower guide collar just touches the measuring probe of the Dial Hight Gauge (Fig. 32).
- Do not loosen screw "Z"! This screw is only for adjusting the tilt of the Guide Bolts P2, P3.

### 8.6 Regolazione statica dell'altezza dei perni guidanastro P2, P3 e P5

Attrezzatura:
piastra di regolazione, misuratore d'altezza, cacciavite

**Preparativi:**

- Smontare il vano cassette (cap. 5).
- Applicare al piatto la piastra diregolazione (vedi figg. 30 e 33).

#### 8.6.1 Perni guidanastro P2, P3

- Regolare l'altezza dei perni P2 e P3 in modo che il collare inferiore si trovi sotto lo spigolo superiore della piastra di regolazione (fig. 31).
- Applicare il misuratore come nostra la fig. 31 e ruotare verso l'alto i perniguidanastro in modo che il collare inferiore sia a contatto col sensore del misuratore d'altezza (fig. 32).
- Non allentare la vite "Z"! Essa serve per la regolazione dell'inclinazione dei perni di guida P2 e P3.

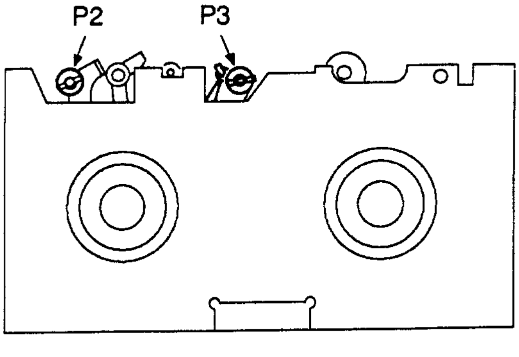


Fig. 30

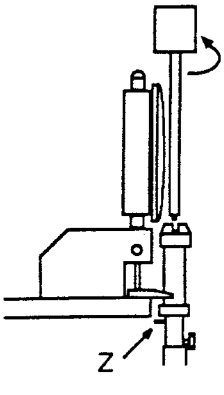


Fig. 31

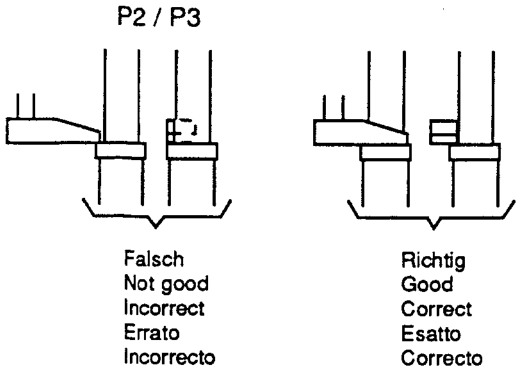

P2 / P3
Falsch
Not good
Incorrect
Errato
Incorrecto
Richtig
Good
Correct
Esatto
Correcto

Fig. 32

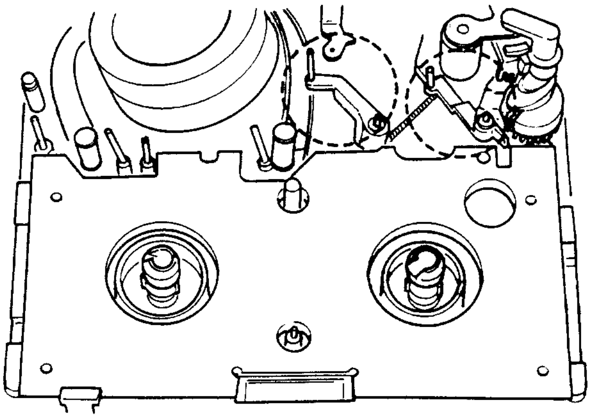


Fig. 33

### 8.6.2 Bandauszugsbolzen P5

**Hinweis:** Einstellmutter (52) des Bandauszugsbolzens P5 nur zu Justagezwecken verdrehen!

- Capstanrotor soweit entgegen dem Uhrzeigersinn drehen, bis die in Abbildung Fig. 33 gezeigte Laufwerkstellung erreicht ist.
- Höhenmeßuhr nach Abbildung Fig. 34 auf die Einstellplatte stellen und Skala auf "Null" eichen.
- Höhenmeßuhr nach Abbildung Fig. 35 am unteren Führungsbund des Bandauszugsbolzens P5 auflegen und mit der Einstellmutter (52) die Anzeige der Höhenmeßuhr auf 0,03mm ± 0,01mm einstellen.

### 8.6.2 Tape Pull-Out Bolt P5

**Note:** The Adjustment Nut (52) on the Tape Pull-out Bolt P5 must be turned for adjustment purposes only!

- Rotate the capstan rotor in the anti-clockwise direction until the mechanics reaches the position shown in Fig. 33.
- Place the Dial Height Gauge onto the Post Adjustment Plate as shown in Fig. 34 and adjust the pointer to zero.
- Place the Dial Height Gauge as shown in Fig. 35 onto the lower guide collar of the Tape Pull-out Bolt P5 and adjust the nut (52) until the pointer of the Dial Height Gauge indicates 0.03mm ± 0.01mm.

### 8.6.2 Perno nel punto d'uscita del nastro P5

**Nota:** Svitare il dado (52) del perno P5 solo per motivi di regolazione!

- Ruotare il senso antiorario il rotore capstan finchè viene raggiunta la posizione della meccanica riprodotta in fig. 33.
- Applicare il misuratore sulla piastra di regolazione (vedi fig. 34) ed azzerare la sua scala.
- Accostare il misuratore al collare inferiore del perno P5 (fig. 35) e ruotare il dado (52) finchè il misuratore indica l'altezza prevista (0,03 mm ± 0,01 mm).

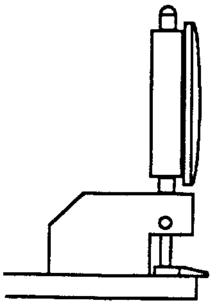


Fig. 34

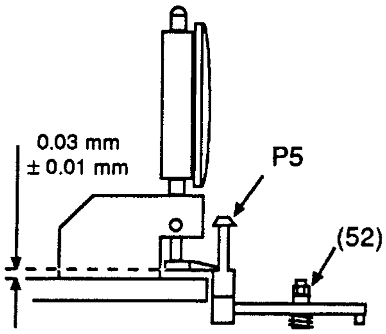

0.03 mm
± 0.01 mm
P5
(52)

Fig. 35

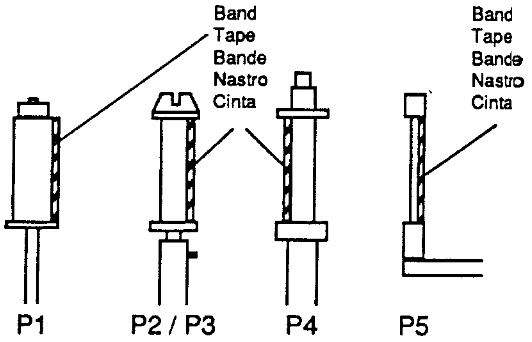

Band
Tape
Bande
Nastro
Cinta
Band
Tape
Bande
Nastro
Cinta
P1
P2 / P3
P4
P5

Fig. 36

### 8.6.3 Kontrolle der statischen Höheneinstellung

- Cassettenschacht einbauen (Kap. 6).
- A / W - Cassette wiedergeben.
- Prüfen, ob das Band an den Bolzen P1, P2, P3, P4 und P5 ohne zu bördeln läuft (Fig. 36...Fig. 38).
- Gegebenenfalls Höhenjustage Kap 8.6.1 und 8.6.2 wiederholen.
- Dynamische Einstellung der Bandführungsbolzen P2, P3 prüfen (Kap. 8.7.1)

### 8.6.3 Checking the Static Height Adjustment

- Refit the cassette compartment (para 6).
- Playback a record / playback cassette.
- Check that the tape runs past the Bolts P1, P2, P3, P4 and P5 without crinkling (Fig. 36 ... Fig. 38).
- If necessary, repeat the height adjustment as described in paras 8.6.1 and 8.6.2.
- Check the Dynamic Adjustment of the Tape Guide Bolts P2, P3 (para 8.7.1).

### 8.6.3 Controllo della regolazione statica dell'altezza

- Montare il vano cassette (cap. 6).
- Riprodurre una cassetta A/W.
- Controllare se il nastro scorre senza piegarsi lungo i perni P1, P2, P3, P4 e P5 (figg. 35 ... 38).
- Eventualmente ripetere la regolazione dell'altezza come ai capitoli 8.6.1 e 8.6.2.
- Controllare la regolazione dinamica dei perni guidanastro P2 e P3 (cap. 8.7.1).

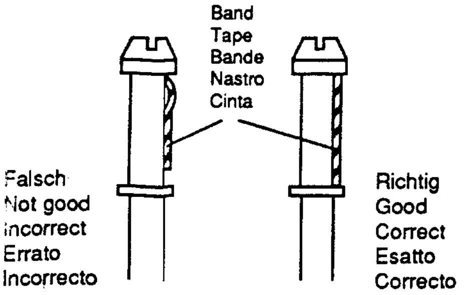

Band
Tape
Bande
Nastro
Cinta
Falsch
Not good
Incorrect
Errato
Incorrecto
Richtig
Good
Correct
Esatto
Correcto

Fig. 37

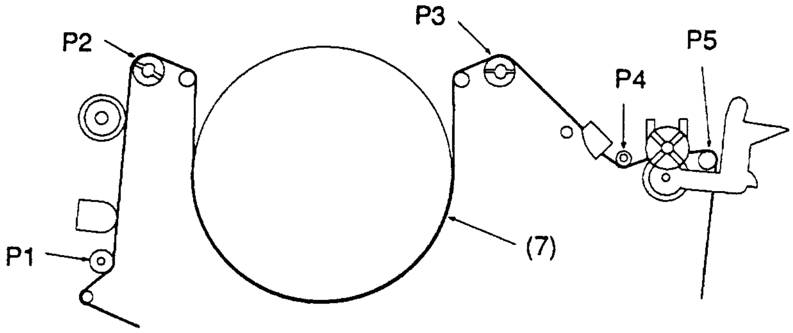

P2
P3
P5
P4
P1
(7)

Fig. 38

### 8.7 Bandlaufeinstellung / Kompatibilitätseinstellung

Diese Einstellungen sind grundsätzlich nach Tausch des Audio-/Synchronkopfes (A/C), der Andruckrolle oder nach Justage der Bolzen P2, P3, P5 durchzuführen bzw. zu überprüfen. Dabei muß folgende Reihenfolge eingehalten werden:

8.7.1 Dyn. Einstellung der Bolzen P2, P3
8.7.2 Einstellen der Neigung des A/C -Kopfes
8.7.3 Höheneinstellung des A/C-Kopfes
8.7.4 Azimut-Einstellung des A/C-Kopfes
8.7.5 Einstellen der horizontalen Lage des A/C-Kopfes

### 8.7.1 Dynamische Einstellung der Bolzen P2, P3

Meßmittel: Testcassette, Oszilloskop

- Oszilloskop nach Abbildung Fig. 39 anschließen:
  Tastkopf 1 an TP 1
  Tastkopf 2 an TP 2
- Testcassette wiedergeben (Tracking in Mittelstellung)
- Falls sich Hüllkurven wie die Beispiele "A" und "B" in Abbildung Fig. 40 zeigen, Hüllkurve mit dem Einlauf-Bandführungsbolzen P2 nach Abbildung Fig. 40 - "E" einstellen.
- Falls sich Hüllkurven wie die Beispiele "C" oder "D" in Abbildung Fig. 40 zeigen, Hüllkurve mit Auslauf-Bandführungsbolzen P3 nach Abbildung Fig. 40 - "E" einstellen.
- Trackingeinstellung nach "+" und "-" variieren. Dabei sollen die Hüllkurvenränder parallel zusammenlaufen (Fig. 41).
- Tracking auf maximale Hüllkurvenamplitude einstellen. Diese muß folgende Grenzwerte einhalten (Fig. 42):
  **V1 / V ≥ 0,7 ; V2 / V ≥ 0,8**
- Gegebenenfalls Einstellung wiederholen.

### 8.7 Tape Transport Adjustment / Compatibility Adjustment

These adjustments must be carried out or checked in every case after every replacement of the A/C head, the Pressure Roller or after adjusting the Bolts P2, P3, P5. The following sequence must be adhered to:

8.7.1 Dynamic adjustment of the Bolts P2, P3
8.7.2 Tilt adjustment of the A/C Head
8.7.3 Height adjustment of the A/C Head
8.7.4 Azimuth adjustment of the A/C Head
8.7.5 Horizontal position adjustment of the A/C Head

### 8.7.1 Dynamic adjustment of the Bolts P2, P3

Service Aids: Test Cassette, Oscilloscope

- Connect the oscilloscope as shown in Fig. 39: Test Probe 1 to TP 1
  Test Probe 2 to TP 2
- Playback the test cassette (tracking to mid setting).
- If the FM envelopes are displayed as shown in examples "A" and "B" in Fig. 40 adjust with the Run-in Tape Guide Bolt P2 so that the FM envelopes are as shown in Fig. 40 - "E".
- If the FM envelopes are displayed as shown in example "C" or "D" in Fig. 40, adjust with the Run-out Tape Guide Bolt P3 so that the FM envelopes are as shown in Fig. 40 - "E".
- Vary the Tracking in the "+" and "-" directions. When doing so the FM envelope should show parallel converging lines (Fig. 41).
- Adjust the tracking to obtain maximum FM envelope amplitude. This must produce the following basic values (Fig. 42):
  **V1 / V ≥ 0.7 ; V2 / V ≥ 0.8**
- If not obtained repeat these adjustments.

### 8.7 Regolazioni di scorrimento del nastro/ Controllo compatibilità

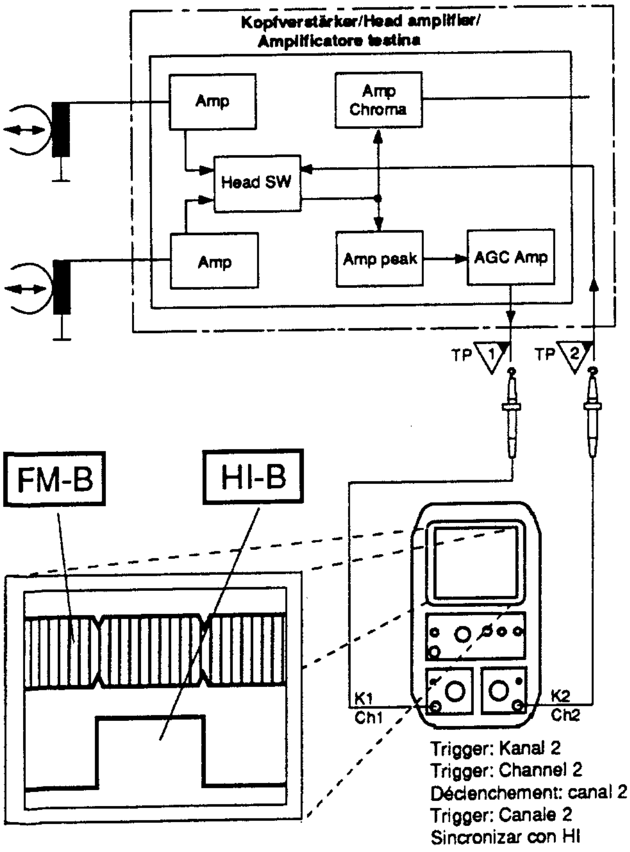
Queste regolazioni devono essere effettuate o controllate generalmente quando la testina audio e sincronismo (A/C) o il rullo preminastro vengono sostituiti oppure dopo la regolazione dei perni P2, P3 e P5. In questi casi si raccomanda di rispettare la sequenza qui riportata:

8.7.1 Regolazione dinamica dei perni guida nastro P2, P3
8.7.2 Regolazione dell'inclinazione della testina A/C
8.7.3 Regolaz. dell'altezza della testina A/C
8.7.4 Regolazione azimutale della testina A/C
8.7.5 Regolaz. orizzontale della testina A/C

### 8.7.1 Regolazione dinamica dei perni guidanastro P2, P3

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l'oscilloscopio come indicato in fig. 39: sonda 1 al punto TP 1
  sonda 2 al punto TP 2
- Riprodurre la cassetta campione (tracking in pos. centrale).
- Se l'inviluppo (FM dal nastro) si presenta come negli esempi A e B della fig. 40, effettuare una regolazione con l'aiuto del perno P2 all'ingresso del nastro finchè risulta come nell'esempio E.
- Se l'inviluppo è invece uguale agli esempi C o D (fig. 40), regolare il perno P3 all'uscita del nastro in modo ottenere l'oscillogramma dell'esempio E.
- Variare in direzione "+" e "-" la regolazione tracking. Durante questa operazione, i bordi dell'inviluppo devono scorrere quasi parallelamente (fig. 41).
- Col regolatore tracking ottenere la massima ampiezza dell'inviluppo. Essa deve corrispondere ai seguenti valori limite (fig. 42):
  **V1 / V ≥ 0,7 ; V2 / V ≥ 0,8**
- Se questi valori non vengono raggiunti, occorre ripetere la regolazione.



Trigger: Kanal 2
Trigger: Channel 2
Déclenchement: canal 2
Trigger: Canale 2
Sincronizar con HI

Fig. 39

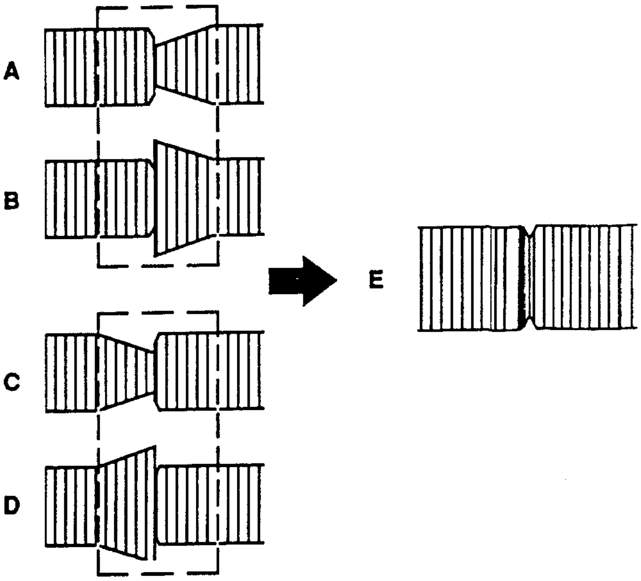


Fig. 40

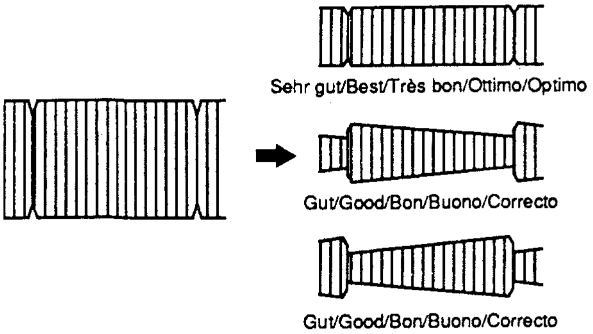

Sehr gut/Best/Très bon/Ottimo/Optimo
Gut/Good/Bon/Buono/Correcto
Gut/Good/Bon/Buono/Correcto

Fig. 41

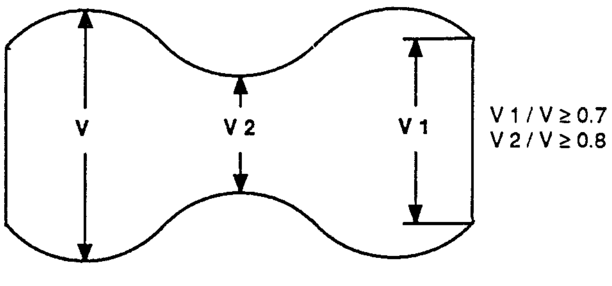

V
V 2
V 1
V 1 / V ≥ 0.7
V 2 / V ≥ 0.8

Fig. 42

### 8.7.2 Einstellen der Neigung des A/C-Kopfes

- Unbespielte Cassette vom Bandanfang an wiedergeben.
- Neigung des A/C-Kopfes (34) mit Schraube "A1" (Fig. 43 / 44) so einstellen, daß das Band bei manueller Bandzugerhöhung leicht sichtbar, jedoch ohne zu bördeln am unteren Führungsbund des Bandlaufbolzens P4 aufliegt.
- Höheneinstellung des A/C-Kopfes prüfen (Kap. 8.7.3)

### 8.7.2 Tilt Adjustment of the A/C Head

- Playback an un-used cassette from the beginning.
- Adjust the tilt of the A/C head (34) with the screw "A1" (Fig. 43 / 44) so that the tape, whilst manually increasing the tape tension, just touches the lower collar of the Tape Guide Bolt P4 without crinkling.
- Check the height adjustment of the A/C Head (para 8.7.3)

### 8.7.2 Regolazione dell'inclinazione della testina A/C

- Riprodurre dall'inizio una cassetta non registrata.
- Con la vite "A1" (fig. 43 / 44) regolare l'inclinazione della testina A/C in modo che aumentando manualmente la tensione del nastro, lo stesso scorra senza piegature lungo il collare inferiore del perno P4.
- Controllare l'altezza della testina A/C (cap. 8.7.3).

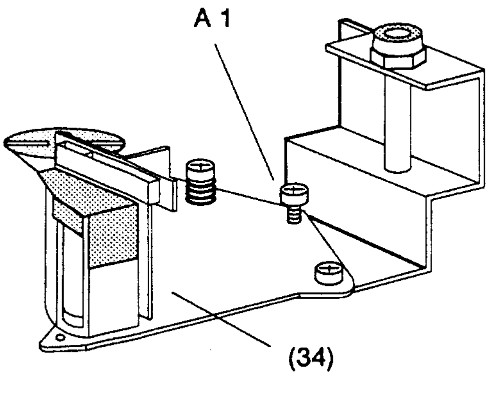


Fig. 43

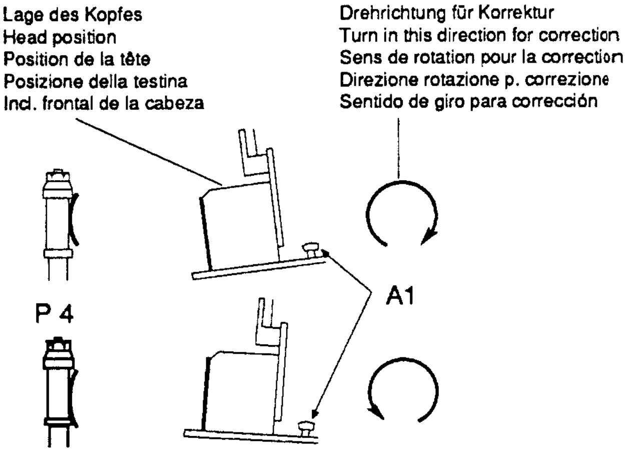

Lage des Kopfes
Head position
Position de la tête
Posizione della testina
Incl. frontal de la cabeza
Drehrichtung für Korrektur
Turn in this direction for correction
Sens de rotation pour la correction
Direzione rotazione p. correzione
Sentido de giro para corrección
P 4
A1

Fig. 44

### 8.7.3 Höheneinstellung des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Testcassette wiedergeben
- mit Mutter (35) den unteren Rand des Synchronkopfes mit dem unteren Rand des Bandes zur Deckung bringen (Fig. 45).

**Kontrolle:**

- Tastkopf des Oszilloskops an EURO-AV-Buchse, Kontakt 1
- 6,3 kHz- Signal der Testcassette wiedergeben
- mit Mutter (35) maximale Ausgangsspannung einstellen (Fig. 46).

### 8.7.3 Height adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Playback the Test Cassette.
- Turn the nut (35) so that the bottom edge of the Sync Head coincides with the lower edge of the tape (Fig. 45).

**CHECK:**

- Connect a test probe from the Oscilloscope to contact 1 of the EURO-AV Socket.
- Playback the 6.3 kHz signal from the Test Cassette.
- Adjust the nut (35) to obtain maximum output voltage (Fig. 46).

### 8.7.3 Regolazione dell'altezza della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Riprodurre la cassetta campione.
- Ruotare il dado (35) finchè il bordo inferiore della testina di sincronismo viene coperto dal bordo inferiore del nastro (fig. 45).

**Controllo:**

- Collegare l'oscilloscopio alla presa Scart, contatto 1.
- Riprodurre la parte a 6,3 kHz della cassetta campione.
- Con il dado (35) regolare per la massima tensione d'uscita (fig. 46).

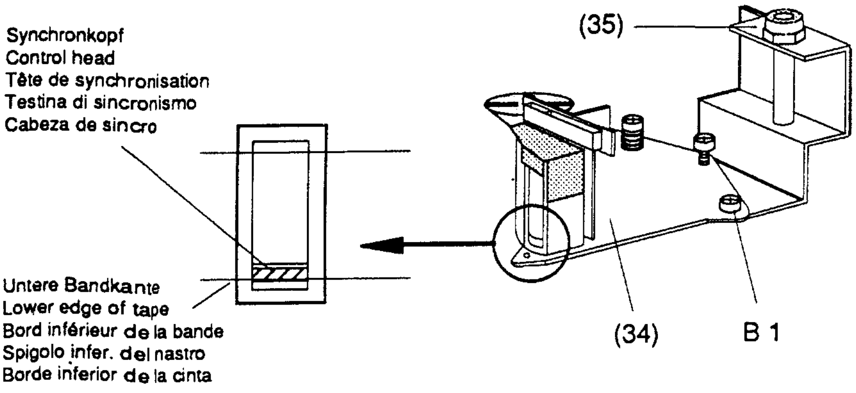

Synchronkopf
Control head
Tête de synchronisation
Testina di sincronismo
Cabeza de sincro
Untere Bandkante
Lower edge of tape
Bord inférieur de la bande
Spigolo infer. del nastro
Borde inferior de la cinta
(35)
(34)
B 1

Fig. 45

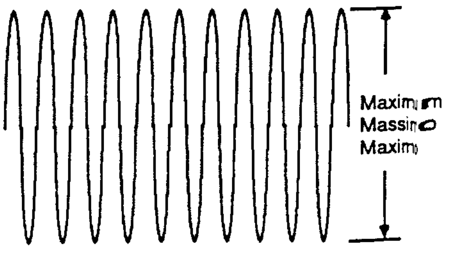

Maximum
Massimo
Maximo

Fig. 46

### 8.7.4 Azimuteinteilung des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Tastkopf des Oszilloskops an EURO-AV-Buchse, Kontakt 1.
- 6,3 kHz-Audiosignal der Testcassette wiedergeben.
- mit Schraube "B1" maximalen Ausgangspegel einstellen (Fig. 45, Fig. 46).

### 8.7.5 Einstellen der horizontalen Lage des A/C-Kopfes

Meßmittel: Testcassette, Oszilloskop

- Oszilloskop nach Abbildung Fig. 39 anschließen
- Testcassette wiedergeben (Tracking in Mittelstellung)
- Hüllkurve (FM vom Band) mit Mutter (36) auf maximale Amplitude einstellen (Fig. 47, Fig. 48).

### 8.7.4 Azimuth adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Connect a test probe from the Oscilloscope to contact 1 of the EURO-AV Socket.
- Playback the 6.3 kHz signal from the Test Cassette.
- Adjust the screw "B1" to obtain maximum output voltage (Fig. 45, Fig. 46).

### 8.7.5 Horizontal position adjustment of the A/C Head

Service Aids: Test Cassette, Oscilloscope

- Connect the Oscilloscope as shown in Fig. 39.
- Playback the Test Cassette (tracking to mid setting).
- Set the envelopes (FM Tape) to maximum amplitude (Fig. 47, Fig. 48) with the nut (36).

### 8.7.4 Regolazione azimutale della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l'oscilloscopio alla presa Scart, contatto 1.
- Riprodurre la parte a 6,3 kHz contenuta nella cassetta campione.
- Regolare la vite "B1" per il massimo livello d'uscita (figg. 45 e 46).

### 8.7.5 Regolazione orizzontale della testina A/C

Attrezzatura:
cassetta campione, oscilloscopio

- Collegare l'oscilloscopio come indicato in fig. 39.
- Riprodurre la cassetta campione (tracking in pos. centrale).
- Regolare l'inviluppo (FM dal nastro) sulla massima ampiezza mediante il dado (36) - figg. 47 e 48.

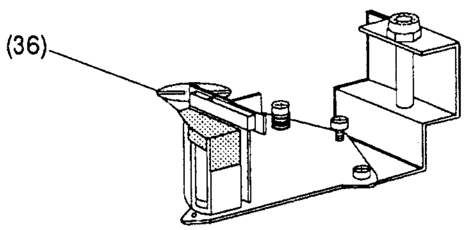


Fig. 47

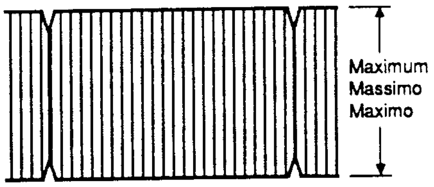


Fig. 48

### 9. Hinweise zu Reparaturen in der Antriebsmechanik

Dieses Laufwerk ist durch den Funktionswahlschalter (55) sehr eng mit der Ablaufsteuerung verknüpft. Die Beziehung zwischen Funktionswahlschalter und den Kurvenrädern bestimmt alle weiteren mechanischen Funktionsabläufe. Falls Hebel, Zahnräder, Rollen usw. nicht exakt eingebaut sind, können deshalb Laufwerksblockaden, bzw. Schäden im Laufwerk oder in der Elektronik auftreten.

Die Abbildungen Fig. 49 / 50 zeigen das Laufwerk in der Bezugsposition "STOP" und die dabei auftretende Anordnung der Markierungslöcher. Die Bezugsposition "STOP" ist identisch mit der Laufwerkstellung "Umspulbetrieb". Diese entspricht der 2. Raststellung des Kupplungsrades (116), wenn diese Laufwerkstellung durch Drehen des Capstanrotors von Hand angefahren wird.

Der Austausch von Bauteilen in der Antriebsmechanik darf nur in dieser Laufwerkstellung erfolgen.

### 9. Notes on Repairing the Drive Mechanism

This Drive Mechanism is very closely coupled with the Sequence Control by means of the Mode Select Switch (56). The relationship between the Mode Select Switch and the Cam Gears determines all the sequences of the other mechanical operations. If, therefore, the levers, gears and rollers etc, are not correctly fitted, the drive mechanism may fail to work and damage may occur within the mechanics or electronic circuits.

The illustrations Fig. 49 / 50 show the drive mechanism in the reference position "STOP" and the resulting alignment of the marking holes. The reference position "STOP" is identical to the mechanical position during "WINDING MODE". This corresponds to the second locking position of the clutch disc (116), when this mechanical position is reached by rotating the capstan rotor by hand.

Replacement of components in the drive mechanism must only be carried out with the mechanics set to this position.

### 9. Nota di riparazione nella meccanica

Questa meccanica è fortemente vincolata al modulo comando funzioni per mezzo del selettore di funzioni (55). Il rapporto esistente tra il selettore di funzioni e le ruote a camme determina tutti gli altri movimenti meccanici. Pertanto, se leve, ruote dentate o rulli ecc. sono stati montati erroneamente, la meccanica può bloccarsi oppure possono verificarsi danni alle parti meccaniche o elettriche.

Le figure 49 / 50 mostrano la meccanica in situazione di Stop e le rispettive posizioni dei fori di riferimento. Questa posizione di Stop è uguale a quella di avvolgimento veloce e corrisponde alla seconda tacca di arresto del disco frizione (116) che si ottiene ruotando manualmente il rotore capstan.

La sostituzione dei componenti della meccanica può avvenire soltanto nella situazione di Stop.

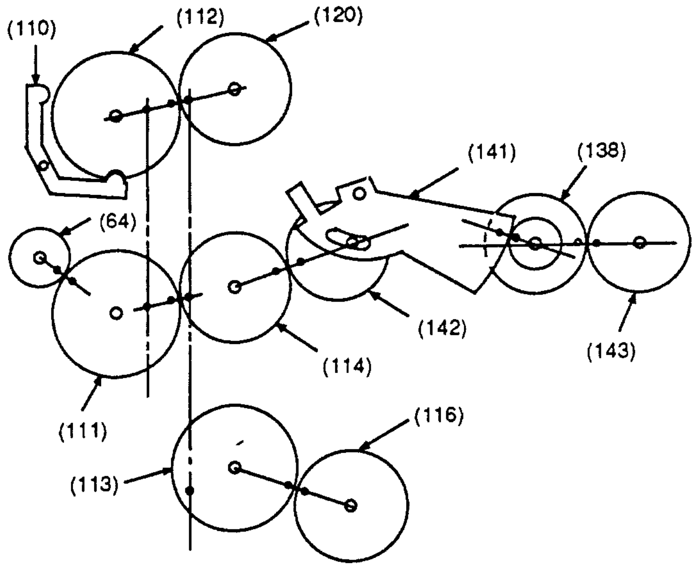


Fig. 49

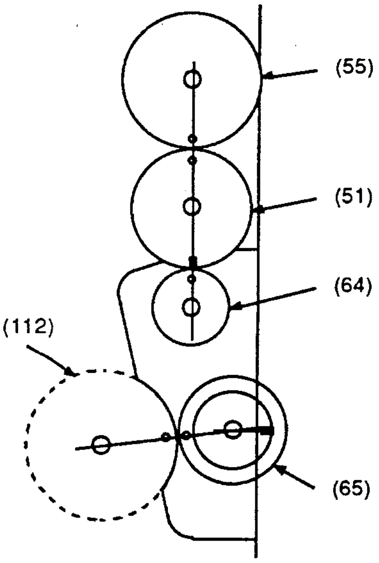


Fig. 50

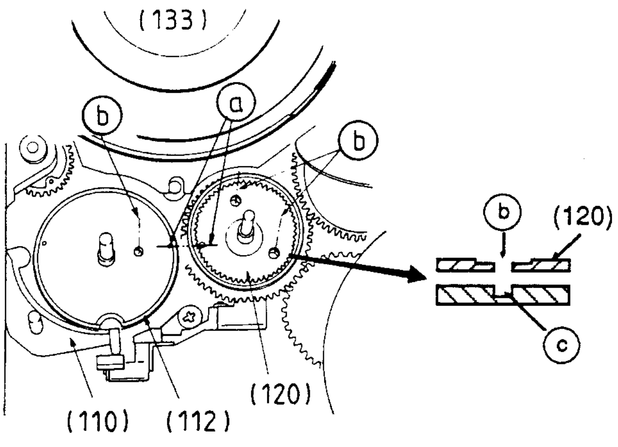


Fig. 51

### 9.1 Kurvenrad (112), Ringrad (120), Sperrhebel (110)

- Ringrad (120) so einbauen, daß die Markierungslöcher ⓑ im Ringrad mit den Markierungslöchern ⓒ im Laufwerkchassis übereinstimmen (Fig. 51).
- Kurvenrad (112) so einbauen, daß das Markierungsloch ⓑ mit dem Markierungsloch ⓒ im Laufwerk übereinstimmt und das Markierungsloch ⓐ dem Markierungsloch ⓐ des Ringrades (120) gegenübersteht.
- Sperrhebel (110) einsetzen.

### 9.2 Kurvenrad (111), Untersetzungszahnrad (64)

- Untersetzungszahnrad (64) von der Oberseite des Laufwerks einsetzen (Fig. 52).
- Kurvenrad (111) so auf das Kurvenrad (112) stecken, daß sich die Markierungslöcher ⓐ des Kurvenrades (111) und des Untersetzungszahnrads (64) gegenüberstehen. Gleichzeitig müssen die Markierungslöcher ⓑ der Kurvenräder (111) und (112) genau übereinander liegen (Fig. 51 / 52).

### 9.1 Sub Cam Gear (112), Ring Gear (120), Locking Lever (110)

- Fit the ring gear (120) so that the marked holes ⓑ in the Ring Gear lines up with the marked holes ⓒ in the mechanical chassis (Fig. 51).
- Fit the Sub Cam Gear (112) so that the marked hole ⓑ lines up with the marked hole ⓒ in the mechanics and that the marked hole ⓐ faces towards the marked hole ⓐ on the Ring Gear (120).
- Fit the Locking Lever (110).

### 9.2 Cam Gear (111), Reduction Toothed Gear (64)

- Fit the Reduction Toothed Gear (64) from the top of the mechanics (Fig. 52)
- Fit the Cam Gear (111) onto the Sub Cam Gear (112) so that the marked holes ⓐ on the Cam Gear (110) and the Reduction Gear (64) are aligned towards each other. In this position the marked holes ⓑ on the Cam Gears (111) and (112) must lie accuratly over each other (Fig. 51 / 52).

### 9.1 Ruota a camme (112), ruota ad anello (120), leva di bloccaggio (110)

- Inserire la ruota (120) con i fori ⓑ che coincidano con quelli ⓒ del telaio (fig. 51).
- Inserire la ruota (112) in modo che il foro ⓑ coincida con quello ⓒ della meccanica ed il foro ⓐ sia alla stessa altezza di quello ⓐ ruota ad anello (120).
- Applicare la leva di bloccaggio (110).

### 9.2 Ruota a camme (111), ruota dentata (64)

- Inserire la ruota dentata (64) dalla parte superiore della meccanica (fig. 52).
- Incastrare la ruota (111) in quella (112) in modo che i fori ⓐ delle ruote (111) e (64) risultino coincidenti. Contemporaneamente i fori ⓑ delle ruote (111) e (112) devono trovarsi sovrapposti (fig. 51 / 52).

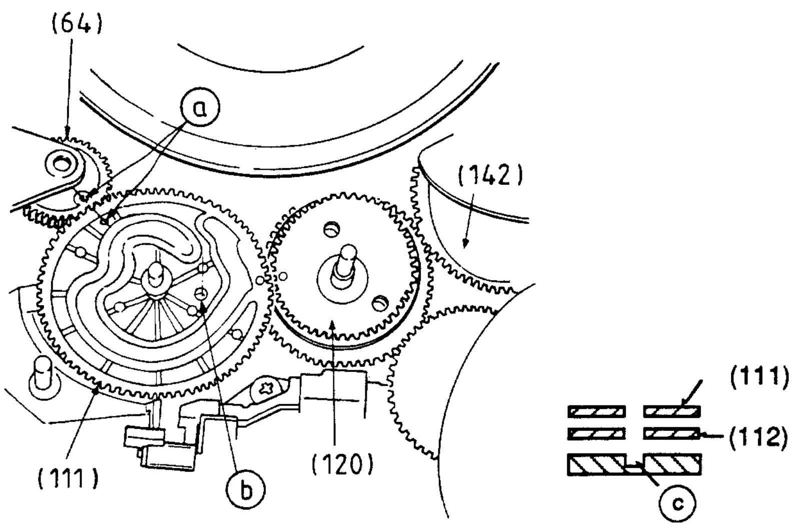


Fig. 52

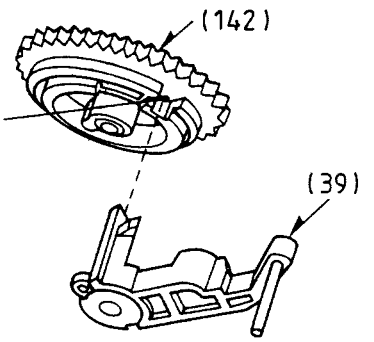


Fig. 53

### 9.3 Ladekurvenrad (142), Zwischenrad (114)

- Ladekurvenrad (142) so einbauen, daß der Hilfsladehebel (39) in die Aussparung "e" eingreift (Fig. 53).
- Zwischenrad (114) auf das Ringrad (120)

### 9.3 Loading Cam Gear (142), Intermediate Gear (114)

- Fit the Loading Cam Gear (142) so that the Sub Loading Lever (39) engages with the cut out "e" (Fig. 53).
- Fit the Intermediate gear (114) onto the Ring

### 9.3 Ruota di caricamento (142), ruota intermedia (114)

- Montare la ruota (142) in modo che la leva (39) si agganci nella fessura "e" (fig. 53).
- Incastrare la ruota (114) nella ruota ad

stecken. Die Markierungslöcher ⓐ des Zwischenrades (114) und des Kurvenrades (111), sowie die Markierungslöcher ⓑ des Zwischenrades (114) und des Ladekurvenrades (142) müssen gegenüberstehen. Gleichzeitig müssen das Markierungsloch ⓑ' des Zwischenrades (114), das Markierungsloch ⓑ des Ringrades (120) und das Markierungsloch ⓒ im Laufwerkchassis übereinanderliegen (Fig. 54).

Gear (120). The marked holes ⓐ on the Intermediate Gear (114) and the Cam Gear (111) and the marked the holes ⓑ on the Intermediate Gear (114) and the Loading Cam Gear (142) must be aligned towards each other. Simultaneously the marked hole ⓑ' on the Intermediate Gear (114), the marked hole ⓑ on the Ring Gear (120) and the marked hole ⓒ on the mechanical chassis must lie accurately over each other (Fig. 54).

anello (120). I fori ⓐ delle ruote (114) e (111) così come quelli ⓑ delle ruote (114) e (142) devono risultare esattamente allineati. Contemporaneamente il foro ⓑ' della ruota (114), il foro ⓑ della ruota (120) ed il foro ⓒ del telaio devono sovrapporsi (fig. 54).

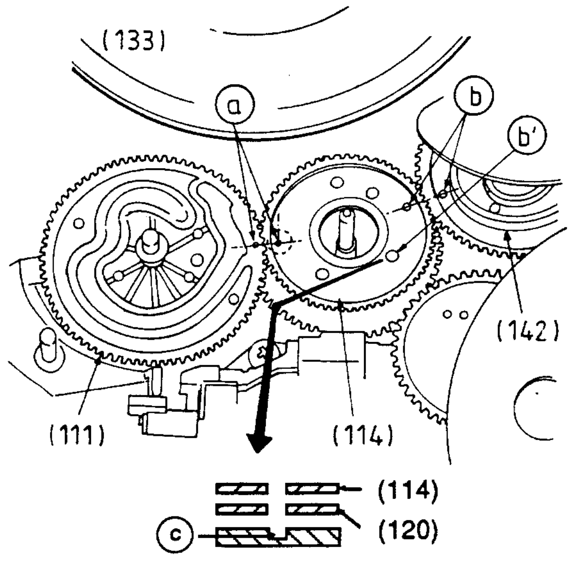


Fig. 54

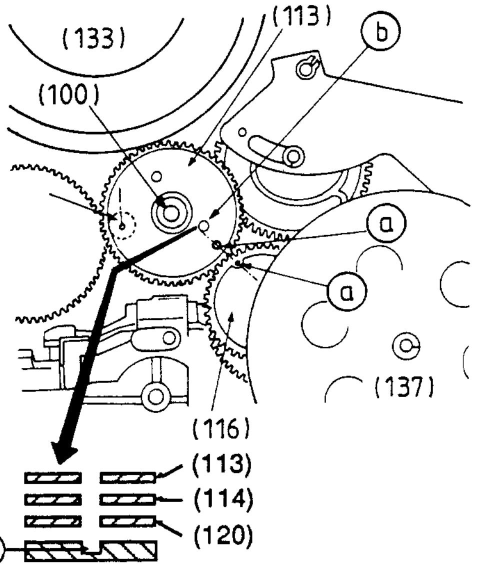


Fig. 55

**9.4 Steuerrad (113)**

- Steuerrad (113) so auf das Zwischenrad (114) stecken, daß das Markierungsloch ⓐ des Steuerrades (113) dem Markierungsloch ⓐ des Kupplungsrades (116) gegenübersteht und die Markierungslöcher ⓑ des Steuerrades (113), ⓑ' des Zwischenrades (114), ⓑ des Ringrades (120) und ⓒ des Laufwerks übereinanderliegen (Fig. 55).
- Sicherungsring (100) montieren.

**9.5 Hauptsteuerschieber (103), Steuerhebel (109)**

- Hauptsteuerschieber (103) einsetzen und mit den Sicherungsringen (100) befestigen (Fig. 56).
- Steuerhebel (109) so einbauen, daß dessen Steuerbolzen "f" in die Steuerkurve des Kurvenrades (111) eingreift.
- Greifringe " X " montieren.

**9.4 Drive Gear (113)**

- Fit the Drive Gear (113) onto the Intermediate Gear (114) so that the marked hole ⓐ on the Drive Gear (113) is aligned towards the marked hole ⓐ on the Clutch Disk (116), and the marked holes ⓑ on the Drive Gear (113), marked hole ⓑ' on the Intermediate Gear (114), marked hole ⓑ on the Ring Gear (120) and the marked hole ⓒ on the mechanics lie accurately over each other (Fig. 55).
- Fit the Securing Ring (100).

**9.5 Main Control Lever (103), Control Lever (109)**

- Fit the Main Control Lever (103) and secure with the securing ring (100) (Fig. 56)
- Fit the Control Lever (109) so that the Drive Bolt "f" engages with the cam curve of the Cam Gear (111)
- Fit the Grip Ring "X".

**9.4 Ruota di comando (113)**

- Appoggiare la ruota (113) su quella intermedia (114) con il foro ⓐ alla stessa altezza del foro ⓐ della frizione (116) e con i fori ⓑ delle ruote (113), ⓑ' (114) e ⓑ (120) e ⓒ del telaio perfettamente sovrapposti (fig. 55).
- Montare l'anello di sicurezza (100)

**9.5 Cursore (103) Leva di comando (109)**

- Infine montare il cursore (103) e fissarlo con gli anelli (100) (fig. 56).
- Inserire la leva (109) in modo che il perno " f " della stessa entri nell'apposita guida della ruota (111).
- Applicare due grower " X ".

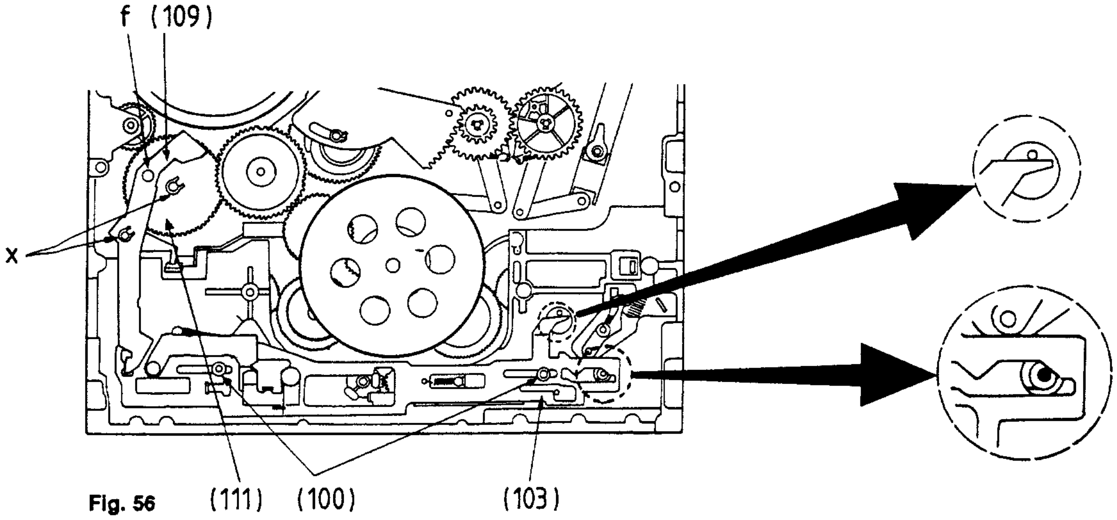


Fig. 56

### 9.6 Laderäder (138,143), Zahnsegment (141), Bremshebel (105), Spannrollenhebel (108)

- Bandführungsbolzen P2, P3 in Stellung "STOP" bringen.
- Laderäder (138, 143) so einsetzen, daß sich die Markierungslöcher ⓑ gegenüberstehen (Fig. 57).
- Zahnsegment (141) nach Fig. 57 einbauen. Das Markierungsloch ⓑ des Zahnsegments (141) muß sich gegenüber der Markierungsnase ⓓ des Laderades (138) befinden.
- Bremshebel (105) und Greifringe "X" montieren.
- Spannrollenhebel (108) einbauen.
- Antriebsriemen spannen (Kap. 8.1)

### 9.6 Loading Gears (138,143), Toothed Segment (141), Brake Lever (105), Tension Roller Lever (108)

- Set the Tape Guide Bolts P2 and P3 into the "STOP" position.
- Fit the Loading Gears (138, 143) so that the marked holes ⓑ are aligned towards each other (Fig. 57).
- Fit the Toothed Segment (141) as shown in Fig. 57. The marked hole ⓑ on the Toothed Segment (141) must be aligned towards the marked lug ⓓ on the Loading Gear (138).
- Fit the Brake Lever (105) and the Grip Ring "X".
- Fit the Tension Roller Lever (108).
- Adjust the tension of the drive belt (para 8.1)

### 9.6 Ruote di caricamento (138, 143), segmento dentato (141), leva di frenata (105), leva rullo tensore (108)

- Regolare i perni di guida P2, P3 in posizione di nastro scaricato.
- Inserire le ruote (138, 143) in modo che i fori ⓑ risultino coincidenti (fig. 57).
- Montare il segmento dentato (141) come indicato in fig. 57. Il foro ⓑ di questo segmento deve trovarsi alla medesima altezza del nasello ⓓ della ruota (138).
- Montare la leva (105) e (108) e le grower "X".
- Montare la leva (108).
- Regolare la tensione della cinghia (cap. 8.1).

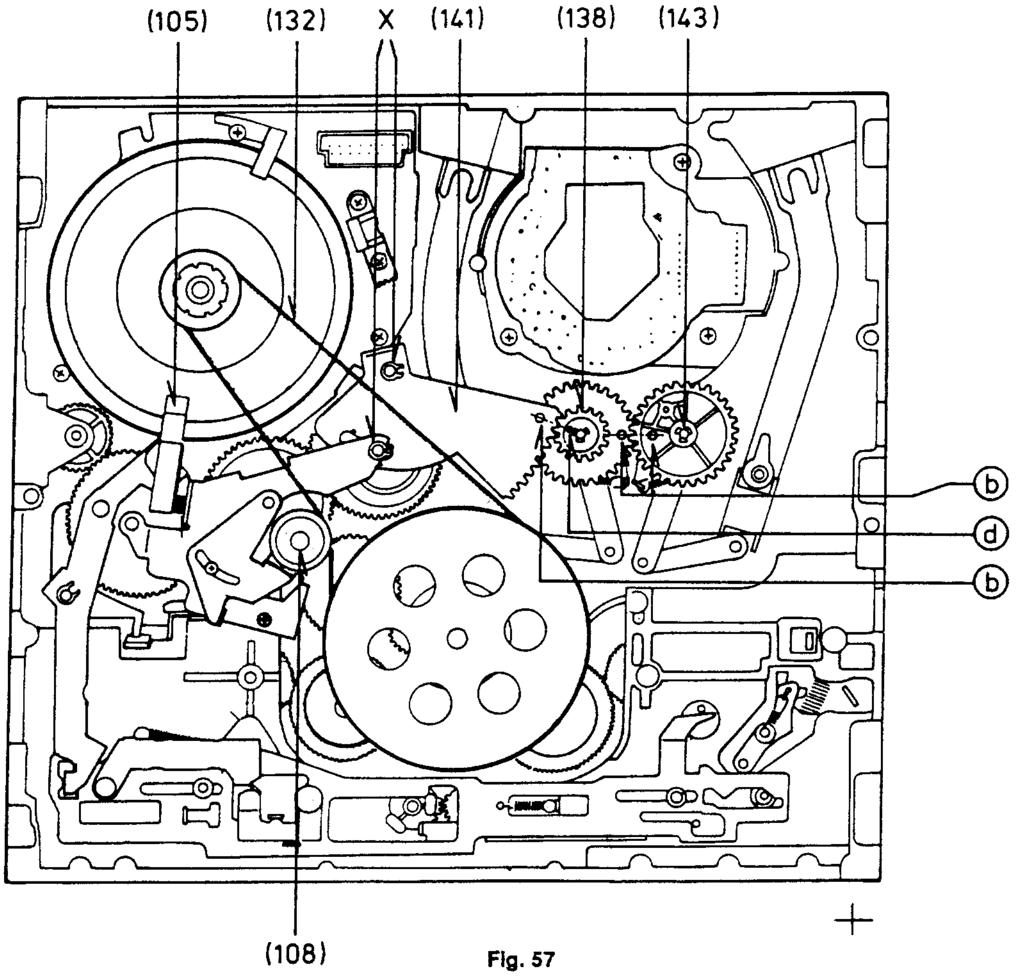


Fig. 57

### 9.7 Zwischenrad (65)

**Hinweis:** Bevor Sie das Zwischenrad einbauen, müssen sich alle Zahnräder in den bisher beschriebenen Positionen befinden.

- Zwischenrad (65) nach Abbildung Fig. 58 einsetzen. Die Markierungslöcher ⓐ des Zwischenrades (65) und des Kurvenrades (112) müssen sich gegenüberstehen.

### 9.8 Funktionswahlschalter (55), P5-Zahnsegment (50)

- Funktionswahlschalter (55) einsetzen, Schraube "g" eindrehen und Kontakte "h" anlöten (Fig. 59).
- P5-Zahnsegment (50) nach Abbildung Fig. 59 einsetzen. Das Markierungsloch ⓐ des P5-Zahnsegments (50) muß dem 1. Zahn des Zahnsegments des P5-Hebels (53) gegenüberstehen.

### 9.7 Intermediate Gear (65)

**Note:** Before fitting the Intermediate Gear make sure that all other gears are in the positions described earlier.

- Fit the Intermediate Gear (65) as shown in Fig. 58. The marked holes ⓐ on the Intermediate Gear (65) and the Cam gear (112) must be aligned towards each other.

### 9.8 Mode Select Switch (55), P5 Toothed Segment (50)

- Fit the mode select switch (55), tighten the screw "g" and solder the contacts "h" (Fig. 59).
- Fit the P5 Toothed Segment (50) as shown in Fig. 59. The marked hole ⓐ on the P5 Toothed Segment (50) must be aligned towards the first tooth of the Tooth Segment on the P5 Lever (53).

### 9.7 Ruota intermedia (65)

**Nota:** Prima di montare la ruota intermedia, tutte le ruote dentate devono trovarsi nelle posizioni precedentemente indicate.

- Inserire la ruota intermedia (65) come indicato dalla figura 58. I fori ⓐ delle ruote (65) e (112) devono risultare allineati.

### 9.8 Selettore di funzioni (55), segmento dentato P5 (50)

- Inserire il selettore di funzioni (55), fissare la vite "g" e saldare i contatti "h" (fig. 59).
- Posizionare il segmento dentato di P5 (50) corrispondentemente alla fig.59. Il foro ⓐ di questo segmento deve coincidere con il 1ª dente del segmento della leva P5 (53).

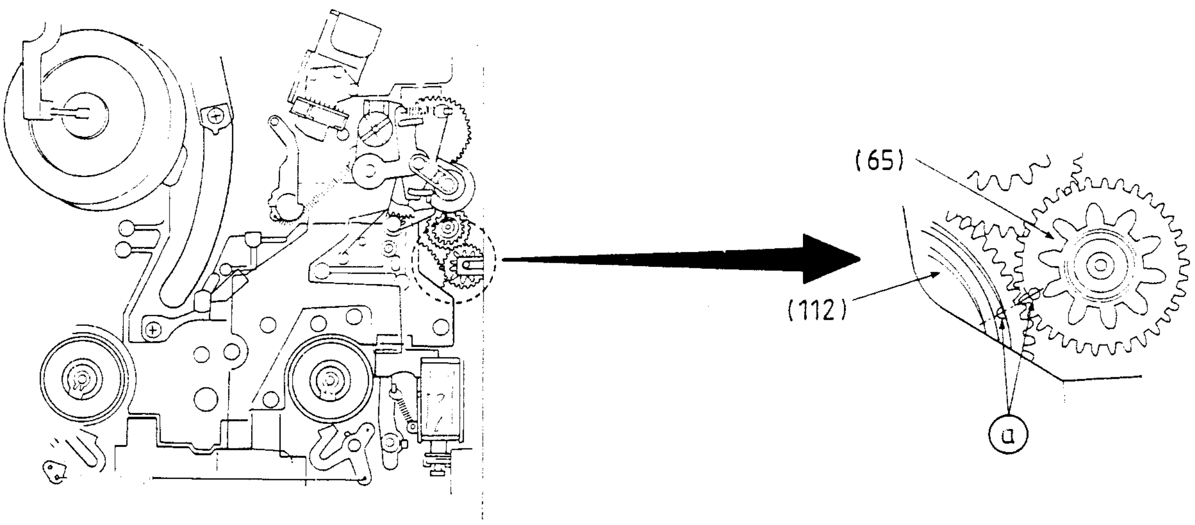


Fig. 58

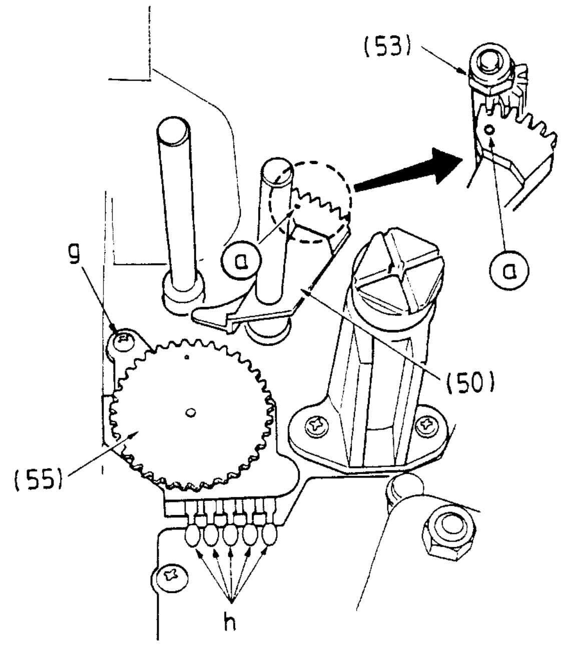


Fig. 59

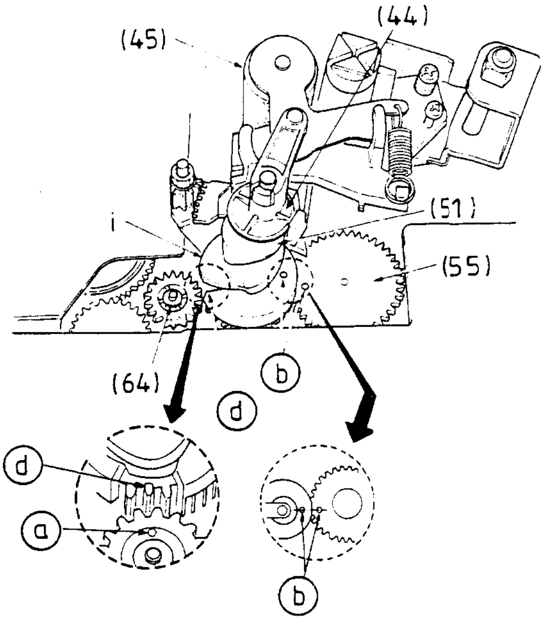


Fig. 60

### 9.9 Rollenhebelantrieb (51), Andruckrolleneinheit (45)

- Rollenhebelantrieb (51) so einsetzen, daß die Ecke " i " des P5-Hebels (53) in der Aussparung des Rollenhebelantriebs liegt (Fig. 60). Die Markierungsnase ⓓ am Zahnrad des Rollenhebelantriebs und das Markierungsloch ⓐ des Untersetzungszahnrads (64) müssen gegenüberstehen. Außerdem müssen die Markierungslöcher ⓑ des Funktionswahlschalters (55) und des Zahnrades des Rollenhebelantriebs (51) gegenüberstehen.
- Andruckrolleneinheit (45) und Sicherungskappe (44) einbauen.

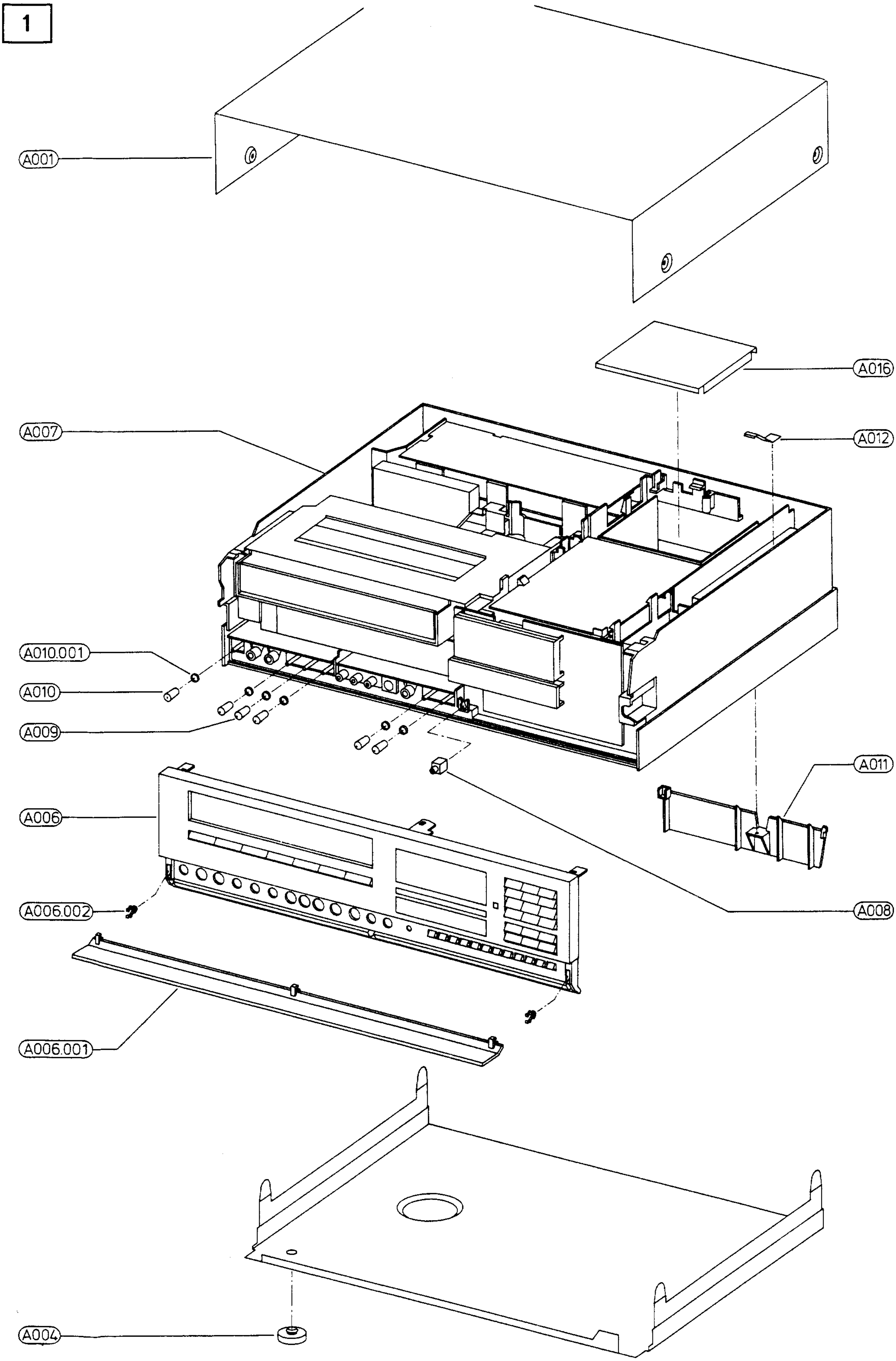
### 9.9 Roller Lever Drive (51), Pressure Roller Assembly (45)

- Fit the Roller Lever Drive (51), so that the corner "i" of the P5 Lever (53) lies in the cut out on the Roller Lever Drive (Fig.60). The marked nose ⓓ on the toothed gear of the Roller Lever Drive and the marked hole ⓐ on the Reduction Toothed Gear (64) must be aligned towards each other. In addition, the marked holes ⓑ on the Mode Select Switch (55) and on the tooth gear of the Roller Lever Drive (51) must be aligned towards each other.
- Fit the Pressure Roller Assembly (45) and the Securing Cap (44).

### 9.9 Leva rullo (51), rullo preminastro (45)

- Applicare la leva (51) in modo che lo spigolo "i" della leva P5 (53) si trovi nell' incavo della leva rullo (51) (fig. 60). Il nasello ⓓ sulla ruota dentata della leva ed il foro ⓐ della ruota (64) devono essere alla medesima altezza. Inoltre anche i fori ⓑ del selettore di funzioni (55) e della ruota dentata della leva (51) devono risultare coincedenti
- Montare il rullo preminastro (45) ed il cappuccio (44).

1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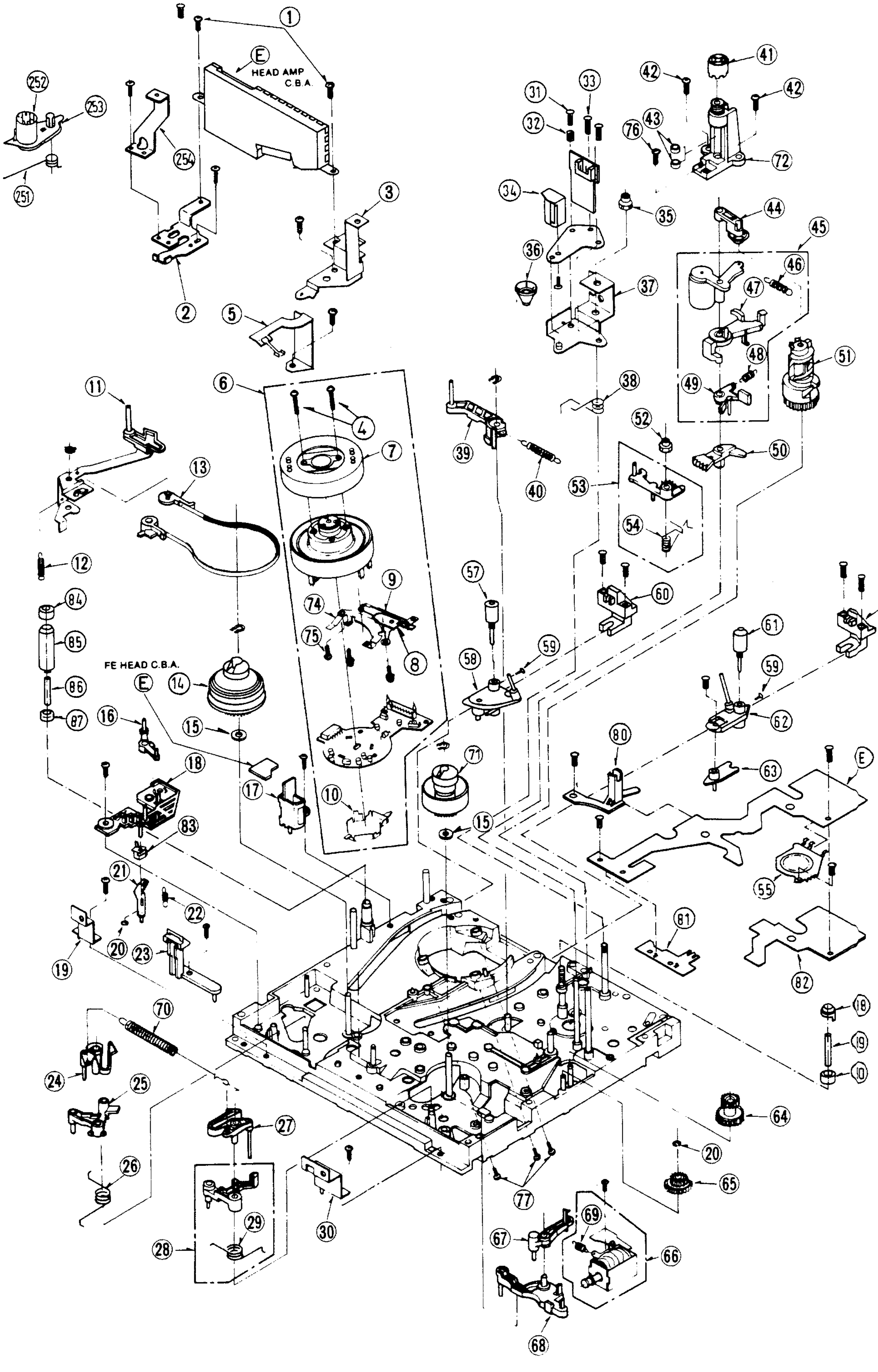

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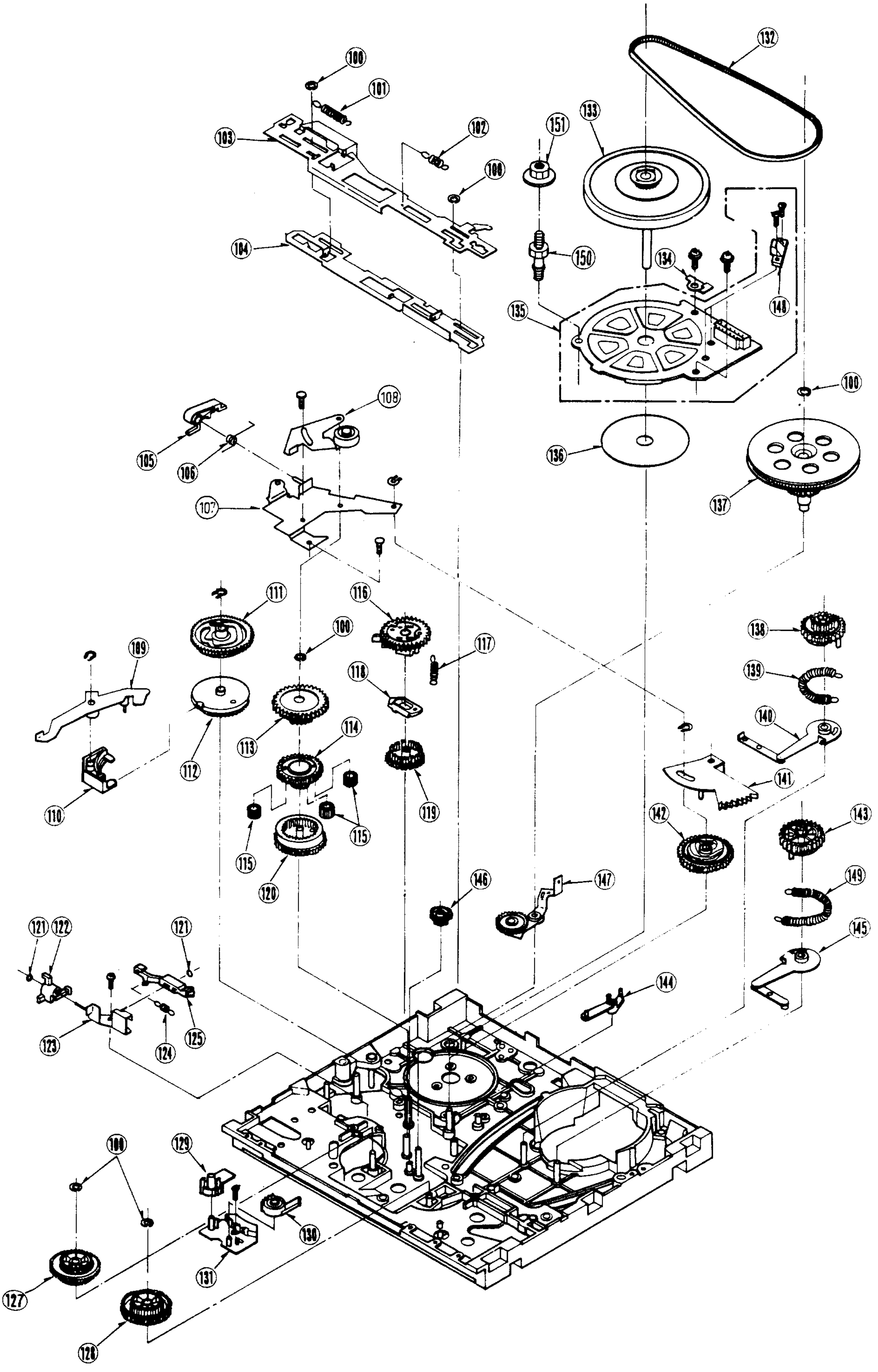
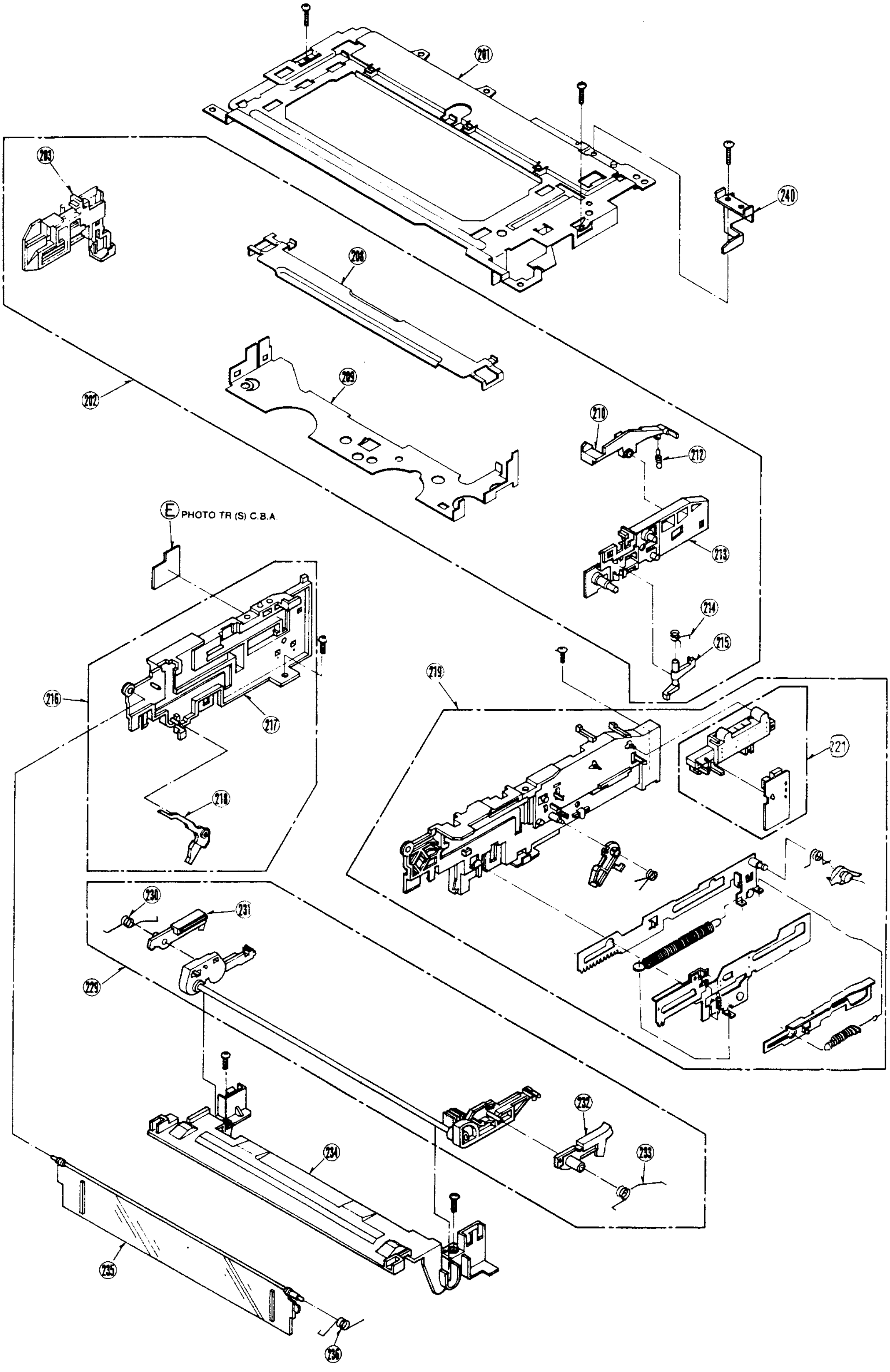
Ⓔ
Ⓔ

3




Ⓔ PHOTO TR (S) C.B.A.

# GRUNDIG ERSATZTEILLISTE

VIDEO

(GB) List of Spare Parts
(F) Liste de pièces détachèes
(I) Lista ricambi
(E) Lista de piezas de repuestos

(D) Btx *32700 #

## 3 / 89

## VS 680 VPT

GMY 1000 Sach-Nr. 9.27035-0151

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| A001.000 | 1 | 27033-154.01 | | GEHAEUSE-OBERTEIL KPL.<br>COUVERCLE DE BOITIER | CABINET TOP<br>PARTE SUPERIOR MUEBLE | PARTE SUPER.MOBILE |
| A002.000 | | 27035-205.01 | | BUCHSENHALTER I (TON)<br>PORTE-DOUILLE | SOCKET HOLDER<br>SOPORTE CONECTOR | SUPPORTO PRESA |
| A003.000 | | 27035-206.01 | | BUCHSENHALTER II (CHROMA)<br>PORTE-DOUILLE | SOCKET HOLDER<br>SOPORTE CONECTOR | SUPPORTO PRESA |
| A004.000 | 1 | 27032-209.01 | | FUSS<br>PIED | FOOT<br>PIE | PIEDINO |
| A006.000 | 1 | 27035-103.01 | | FRONTPLATTE MONT.KPL.<br>PANNEAU AVANT | FRONT PANEL<br>PLACA FRONTAL | PIASTRA FRONTALE |
| A006.001 | 1 | 27035-150.01 | | FRONTKLAPPE MONT.KPL.<br>CLAPET FRONTAL | FRONT FLAP<br>TAPA FRONTAL ABATIBLE | SPORTELLO FRONTALE |
| A006.002 | 1 | 27035-228.01 | | RASTKLAMMER<br>LANGUETTE DE VERROUILLAGE | LOCKING HOOK<br>PESTILLO DE FIJACION | GANCIO DI BLOCCAGGIO |
| A007.000 | 1 | 27035-151.01 | | MONTAGERAHMEN KPL.<br>CADRE DE MONTAGE | MOUNTING FRAME<br>BASTIDOR DE MONTAJE | TELAIO DI MONTAGGIO |
| A008.000 | 1 | 27035-155.00 | | KLINKENBUCHSEN 3,5 KPL.<br>EMBASE JACK | MINIATURE SOCKET<br>CONECTOR HEMBRA PARA JACK | PRESA JACK |
| A009.000 | 1 | 27035-157.01 | 5 X | REGLERKNOPF BEDR.KPL.<br>BOUTON REGL. | CONTROL KNOB<br>BOTON DE POTENCIOMETRO | TASTO REGOLATORE |
| A010.000 | 1 | 27035-158.01 | | REGLERKNOPF BEDR.KPL.<br>BOUTON REGL. | CONTROL KNOB<br>BOTON DE POTENCIOMETRO | TASTO REGOLATORE |
| A010.001 | | 18145-018.00 | 6 X | RINGFEDER<br>RESSORT | RING SPRING<br>MUELLE ACERO | MOLLA MANOPOLA |
| A011.000 | 1 | 27035-231.01 | | ABSTUETZUNG<br>SUPPORT | SUPPORT<br>SOPORTE | SUPPORTO |
| A012.000 | 1 | 27034-211.00 | | MASSEFEDER (TUNER-MOD.)<br>RESSORT DE MASSE | EARTH SPRING<br>RESORTE DE MASA | MOLLA DI MASSA |
| A013.000 | | 09666-489.97 | | DISTANZSTUECK<br>ENTRETOISE | SPACER<br>PZA.PLAST. SEPARADOR | DISTANZIATORE |
| A016.000 | 1 | 27200-562.00 | | ABSCHIRMDECKEL<br>BLINDAGE | SCREENING COVER<br>TAPA BLINDAJE | COPER. SCHERMO |
| A017.000 | | 27035-153.00 | | NETZKABEL KPL.<br>CABLE SECTEUR | MAINS LEAD<br>CABLE DE RED | CAVO DI RETE |
| A018.000 | | 27035-229.00 | | MASSEFEDER<br>RESSORT DE MASSE | EARTH SPRING<br>RESORTE DE MASA | MOLLA DI MASSA |
| A020.000 | | 27511-352.01 | | HF-VERBINDUNGSKABEL KPL.<br>CABLE RACCORDEMENT | CONNECTING CABLE<br>CABLE DE CONEXION POR RF | CAVO DI COLLEGAMENTO |
| A021.000 | 1 | 27123-435.00 | | ERDUNGSFEDER<br>RESSORT MASSE | EARTHING SPRING<br>RESORTE DE MASA | MOLLA MASSA |
| A025.000 | X | 27123-006.01 | | LAUFWERK KPL.G1-7VXY 0479<br>MECANISME D'ENTRAINEMENT<br>KEIN E-TEIL<br>AUCUNE PIESE DE RECHANGE | DRIVE MECHANISM<br>GRUPO MECANICO<br>NO SPARE PART<br>NO ES PIEZA DE REPUESTO | MECCANICA DI MOVIMENTO<br>NON E' UN RICAMBIO |
| A030.000 | X | 27505-078.01 | | BEDIENEINHEIT<br>UNITE DE COMMANDE | CONTROL UNIT<br>UNIDAD DE MANDO | UNITA COMANDI |
| A031.000 | X | 27505-071.01 | | CHASSISPLATTE I<br>C.I. PRINCIPAL | CHASSIS BOARD<br>PLACA CHASIS | PIASTRA TELAIO |
| A032.000 | X | 27505-072.01 | | CHASSISPLATTE II<br>C.I. PRINCIPAL | CHASSIS BOARD<br>PLACA CHASIS | PIASTRA TELAIO |
| A035.000 | X | 27505-075.01 | | VIDEO I<br>VIDEO | VIDEO<br>VIDEO I | VIDEO I |

| Pos. Nr., Pos. No. | Abb Nr. Fig. No. | Sachnummer Part number Références No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| A036.000 | X | 27505-076.01 | | VIDEO II<br>VIDEO II | VIDEO II<br>VIDEO II | VIDEO II |
| A037.000 | X | 27505-077.01 | | VIDEO III<br>VIDEO III | VIDEO III<br>VIDEO III | VIDEO III |
| A040.000 | X | 27505-074.01 | | CHROMA<br>CHROMA | CHROMA<br>MODULO CROMA | CHROMA |
| A041.000 | X | 27505-073.01 | | TON<br>MODULE BF | SOUND<br>SONIDO | AUDIO |
| A042.000 | X | 27505-079.01 | | BILD-TON-KOPFVERSTAERKER<br>AMPLI DE TETE VIDEO - AUD | VIDEO-SOUND-HEAD AMPLIFIE<br>AMPLIFICADOR CABEZAS VIDE | AMPL. TEST. AUD.VID. |
| A045.000 | X | 27505-081.01 | | BILDSPEICHER<br>MEMOIRE D'IMAGE | FIELD STORE<br>MEMORIA DE IMAGEN | MEMORIA D'IMMAGINE |
| A046.000 | X | 27505-080.01 | | ZF-VERSTAERKER<br>AMPLIFICATEUR | I.F. AMPLIFIER<br>AMPLIFICADOR DE FI | AMPLIFICATORE FI |
| A047.000 | | 29502-027.01 | | MODULATOR/TUNER-KOMBINAT.<br>MODULATEUR/TUNER | MODULATOR / TUNER<br>MODULADOR /TUNER | MODULATORE / TUNER |
| A050.000 | | 27520-097.01 | | FERNBEDIEN-GEBER<br>COMMANDE A DISTANCE | REMOTE CONTROL<br>TELEMANDO | TELECOMANDE |
| 0999.997 | | 27035-941.01 | | BEDIENUNGSANLEITUNG<br>MODE D'EMPLOI | INSTRUCTION MANUAL<br>MANUAL DE MANEJO | INSTRUZIONI D'USO |
| | | | | X SIEHE GESONDERTE E-LISTE<br>VOIR LISTE DE PIECES SEP. | X SEE SEPARATE PARTS-LIST<br>VER LISTA ESP. REPUESTOS | X VEDI LISTE RICAMBI A PART E |

## A 025 27123 - 006.01 Laufwerk / Drive mechanism / Mecanisme d´entr. / Meccanica di movi.

Kein Ersatzteil / no spare part / aucune piese de rechange / nessun pezzo di ricambi

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0001.000 | 1 | 75986-208.24 | 2X | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0002.000 | 1 | 75986-208.25 | | WINKEL (L)<br>EQUERRE | BRACKET<br>ANGULO, ESCUADRA | SUPPORTO ANGOLATO |
| 0003.000 | 1 | 75987-263.06 | | WINKEL (R)<br>EQUERRE | BRACKET<br>ANGULO, ESCUADRA | SUPPORTO ANGOLATO |
| 0004.000 | 1 | 75986-208.63 | | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0005.000 | 1 | 75986-208.26 | | ERDUNGSFEDER<br>RESSORT MASSE | EARTHING SPRING<br>RESORTE DE MASA | MOLLA MASSA |
| 0006.000 | 1 | 75986-208.27 | | BANDTROMMEL<br>TAMBOUR DE BANDE | TAPE DRUM<br>TAMBOR DE CINTA | TAMBURO NASTRO |
| 0007.000 | 1 | 75986-208.28 | | KOPFRAD<br>ROUE DE TETE | HEAD WHEEL<br>VOLANTE PORTACABEZAS | RUOTA TESTINA |
| 0008.000 | 1 | 75986-208.64 | | FEDER<br>RESSORT | SPRING<br>MUELLE | MOLLA |
| 0009.000 | 1 | 75986-208.29 | | HALTER<br>FIXATION | HOLDER<br>SOPORTE | SUPPORTO |
| 0010.000 | 1 | 75986-208.30 | | ABSCHIRMBLECH<br>BLINDAGE | SCREENING PLATE<br>CHAPA DE BLINDAJE | SCHERMO |
| 0011.000 | 1 | 75987-263.11 | | BANDZUGFUEHLER<br>BORNE DE BANDE | TAPE TENSION SENSOR<br>SENSOR TENSION DE CINTA | SENSORE TENSIONE NASTRO |
| 0012.000 | 1 | 75987-263.12 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0013.000 | 1 | 75986-208.65 | | BREMSBAND<br>RUBAN DE FREIN | BRAKE TAPE<br>CINTA O FLEJE DE FRENO | NASTRO FRENO |
| 0014.000 | 1 | 75987-263.14 | | WICKELTELLER KPL.<br>PLATEAU DE BOBINAGE | SPOOL CARRIER<br>PLATO DE BOBINADO | PIATTELLO AVVOLGENTE |
| 0015.000 | 1 | 75987-263.15 | 2X | SCHEIBE<br>RONDELLE | WASHER<br>ARANDELA | RONDELLA |

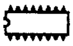
| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0015.001 | 1 | 75986-208.22 | 2X | SCHEIBE 0,3MM<br>RONDELLE | WASHER<br>ARANDELA | RONDELLA |
| 0015.002 | 1 | 75986-208.21 | 2X | SCHEIBE 0.2MM<br>RONDELLE | WASHER<br>ARANDELA | RONDELLA |
| 0016.000 | 1 | 75987-263.16 | | BANDZUGLOESEHEBEL<br>LEVIER DE DETENTE BANDE | TAPE TENSION LIFTING<br>PALANCE ACTIVADORA TENS.CINTA | LEVA SBLOCCO TENS. NASTRO |
| 0017.000 | 1 | 75987-263.17 | | LOESCHKOPF<br>TETE D'EFFACEMENT | ERASE HEAD<br>CABEZA BORRADORA | TESTINA DI CANCELLAZIONE |
| 0018.000 | 1 | 75987-263.18 | | BANDZUGHEBELAUFLAGE<br>SUPPORT LEVIER TENSION DE | TAPE TENSION LEVER<br>APOYO PALANCA TENSORA DE CINTA | SUPP.LEVA TENS.NASTRO |
| 0019.000 | 1 | 75987-263.19 | | WINKEL (L)<br>EQUERRE | BRACKET<br>ANGULO, ESCUADRA | SUPPORTO ANGOLATO |
| 0020.000 | 1 | 75987-263.20 | 2X | SICHERUNGSSCHEIBE<br>CLIP | SAFETY PLATE<br>ARANDELA DE SEGURIDAD | RONDELLA DI SICUREZZA |
| 0021.000 | 1 | 75987-263.21 | | BANDZUGLOESEHEBEL<br>LEVIER DE DETENTE BANDE | TAPE TENSION LIFTING<br>PALANCA ACTIVADORA TENS.CINTA | LEVA SBLOCCO TENS. NASTRO |
| 0022.000 | 1 | 75987-263.22 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0023.000 | 1 | 75986-208.66 | | AUFNAHMESPERRE<br>BLOQUAGE D'ENREGISTREM. | RECORD LOCK<br>BLOQUEO DE GRABACION | BLOCCO DI REGISTRAZIONE |
| 0024.000 | 1 | 75987-208.67 | | SPULE<br>BOBINE | COIL<br>BOBINA | BOBINA |
| 0025.000 | 1 | 75986-208.68 | | GRUNDBREMSE<br>FREIN DE BASE | BASIC BRAKE<br>FRENO PRINCIPAL | FRENO PRINCIPALE |
| 0026.000 | 1 | 75987-263.26 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0027.000 | 1 | 75986-208.69 | | STOPBREMSE<br>FREIN D'ARRET | STOPBRAKE<br>FRENO DE "STOP" | FRENO |
| 0028.000 | 1 | 75987-263.28 | | GRUNDBREMSE<br>FREIN DE BASE | BASIC BRAKE<br>FRENO PRINCIPAL | FRENO PRINCIPALE |
| 0029.000 | 1 | 75987-263.29 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0030.000 | 1 | 75987-263.30 | | WINKEL (R)<br>EQUERRE | BRACKET<br>ANGULO, ESCUADRA | SUPPORTO ANGOLATO |
| 0031.000 | 1 | 75987-263.31 | | EINSTELLSCHRAUBE<br>VIS DE REGLAGE | ADJUSTMENT SCREW<br>TORNILLO DE AJUSTE | VITE REGOLATRICE |
| 0032.000 | 1 | 75987-263.32 | | DRUCKFEDER<br>RESSORT A COMPRESSION | PRESSURE SPRING<br>MUELLE PRESOR | MOLLA DI PRESSIONE |
| 0033.000 | 1 | 75987-263.33 | | EINSTELLSCHRAUBE<br>VIS DE REGLAGE | ADJUSTMENT SCREW<br>TORNILLO DE AJUSTE | VITE REGOLATRICE |
| 0034.000 | 1 | 75986-208.31 | | AUDIO-SYNCHRONKOPF<br>TETE SYNCHRO | AUDIO SYNC HEAD<br>CABEZA SONIDO/SINCRO | TESTINA SINCR. AUDIO |
| 0035.000 | 1 | 75987-263.35 | | MUTTER M4<br>ECROU | NUT<br>TUERCA | DADO |
| 0036.000 | 1 | 75986-208.70 | | EINSTELLMUTTER<br>ECROU DE REGLAGE | ADJUSTING NUT<br>TUERCA DE AJUSTE | DADO DI REGOLAZIONE |
| 0037.000 | 1 | 75986-208.71 | | KOPFTRAEGER<br>TETE SUPPORT | HEAD SUPPORT<br>PORTACABEZA | SUPPORTO TESTINA |
| 0038.000 | 1 | 75987-263.38 | | DRUCKDREHFEDER<br>RESSORT A TORSION | TORSION SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0039.000 | 1 | 75986-208.72 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0040.000 | 1 | 75987-263.40 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0041.000 | 1 | 75987-263.41 | | EINSTELLSCHRAUBE<br>VIS DE REGLAGE | ADJUSTMENT SCREW<br>TORNILLO DE AJUSTE | VITE REGOLATRICE |
| 0042.000 | 1 | 75987-263.42 | 2X | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0043.000 | 1 | 75987-263.43 | 2X | OELFANGRING<br>RONDELLE PROTECTRICE D'HU | OIL STOP DISK<br>ANILLO DETENCION ACEITE | ANELLO DI TENUTA OLIO |
| 0044.000 | 1 | 75987-264.93 | | SICHERUNGSDECKEL<br>CACHE FUSIBILE | FISE COVER<br>TAPA PORTAFUSIBLES | COPERCHIO FUSIBILE |
| 0045.000 | 1 | 75986-208.32 | | ANDRUCKROLLE KPL.<br>ROULEAU DE PRESSION | PRESSURE ROLLER<br>RODILLO PRESOR | RULLO PREMI-NASTRO |
| 0046.000 | 1 | 75986-208.73 | | ANDRUCKFEDER<br>RESSORT DE PRESSION | PRESSURE SPRING<br>MUELLE PRESOR | MOLLA DI PRESSIONE |
| 0047.000 | 1 | 75986-208.74 | | ANDRUCKARM<br>LEVIER PRESSEUR | PRESSURE ARM<br>BRAZO PRESOR | LEVA DI PRESSIONE |

| Pos. Nr.<br>Pos. No. | Abb Nr.<br>Fig. No. | Sachnummer<br>Part.No.<br>Références<br>No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0048.000 | 1 | 75987-263.48 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0049.000 | 1 | 75987-263.50 | | LIFTHEBEL<br>LEVIER ASCENSEUR | LIFT LEVER<br>PALANCA ELEVADORA | LEVA DI SOLLEVAMENTO |
| 0050.000 | 1 | 75986-208.75 | | ZAHNSEGMENT<br>SEGMENT DENTE | TOOTHSECTIONAL<br>SEGMENTO DENTADO | SEGMENTO DENTATO |
| 0051.000 | 1 | 75987-263.52 | | ROLLENHEBELANTRIEB<br>ENTRAINEMENT LEVIER | ROLLER DRIVE LEVER<br>ACCIONAM. PALANCA DE RODILLO | COMANDO LEVA RULLO |
| 0052.000 | 1 | 75987-263.53 | | EINSTELLMUTTER M3<br>ECROU DE REGLAGE | ADJUSTING NUT<br>TUERCA DE AJUSTE | DADO DI REGOLAZIONE |
| 0053.000 | 1 | 75987-263.54 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0054.000 | 1 | 75987-263.55 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0055.000 | 1 | 75986-208.33 | | FUNKTIONSWAHLSCHALTER<br>SELECTEUR DE MODE | FUNCTION SELECTION SWITCH | SELETTORE DI FUNZIONE |
| 0057.000 | 1 | 75986-208.76 | | BANDFUEHRUNGSROLLE<br>ROULEAU DE GUIDAGE | TAPE GUIDE ROLLER<br>RODILLO-GUIA DE CINTA | RULLO GUIDANASTRO |
| 0058.000 | 1 | 75987-263.59 | | UMLENKBOLZENEINHEIT<br>ENSEMBLE PIVOTS | THREADING BOLT ASSEMBLY<br>GRUPO PIVOTE DESVIO | UNITA' PERNO RINVIO |
| 0059.000 | 1 | 75987-263.60 | 2X | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0060.000 | 1 | 75987-263.61 | 2X | BOLZENARRETIERUNG<br>BUTEE | BOLT SECURING LOCK<br>TOPE PASADOR | BLOCCO PERNO |
| 0061.000 | 1 | 75986-208.77 | | BANDFUEHRUNGSROLLE<br>ROULEAU DE GUIDAGE | TAPE GUIDE ROLLER<br>RODILLO-GUIA DE CINTA | RULLO GUIDANASTRO |
| 0062.000 | 1 | 75986-208.78 | | UMLENKBOLZENEINHEIT<br>ENSEMBLE PIVOTS | THREADING BOLT ASSEMBLY<br>GRUPO PIVOTE DESVIO | UNITA' PERNO RINVIO |
| 0063.000 | 1 | 75987-263.64 | | EINSTELLPLATTE<br>PLATINE DE REGLAGE | ADJUSTING PLATE<br>PLETINA DE AJUSTE | PIASTRA REGOLATRICE |
| 0064.000 | 1 | 75987-263.65 | | UNTERSETZUNGSRAD<br>PIGNON DE REDUCTION | REDUCTION GEAR WHEEL<br>ENGRANAJE DESMULTIPLICADOR | RIDUTTORE |
| 0065.000 | 1 | 75987-263.66 | | ZWISCHENRAD<br>ROUE INTERMEDIAIRE | IDLER WHEEL<br>POLEA INTERMEDIA | PULEGGIA INTERMEDIA |
| 0066.000 | 1 | 75986-208.36 | | HUBMAGNET<br>SOLENOIDE A DEPLACEMENT | LIFTING SOLENOID<br>ELECTROIMAN DESLIZANTE | MAGNETE DI SOLLEVAMENTO |
| 0067.000 | 1 | 75987-263.68 | | SCHWENKSCHIEBER<br>GLISSIERE | SWIVEL SLIDER<br>CORREDERA BASCULANTE | CURSORE |
| 0068.000 | 1 | 75986-208.37 | | MAGNETHEBEL<br>LEVIER A AIMANT | MAGNETIC LEVER<br>PALANCA DEL ELECTROIMAN | LEVA MAGNETICA |
| 0069.000 | 1 | 75987-263.70 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0070.000 | 1 | 75986-208.79 | | BREMSFEDER<br>RESSORT FREIN | BRAKE SPRING<br>MUELLE DEL FRENO | MOLLA FRENO |
| 0071.000 | 1 | 75987-263.72 | | WICKELTELLER R KPL.<br>PLATEAU DE BOBINAGE | SPOOL CARRIER<br>PLATO DE BOBINADO | PIATTELLO AVVOLGENTE |
| 0072.000 | 1 | 75987-263.73 | | CAPSTANLAGER KPL.<br>PALIER CABESTAN | CAPSTAN BEARING<br>COJINETE DEL "CAPSTAN" | BOCCOLA CAPSTAN |
| 0076.000 | 1 | 75987-264.94 | | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0077.000 | 1 | 75987-263.74 | | SCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0080.000 | 1 | 75986-208.80 | | HALTER<br>FIXATION | HOLDER<br>SOPORTE | SUPPORTO |
| 0081.000 | 1 | 75986-208.81 | | PLATTE<br>PLAQUE | PLATE<br>PLACA | PIASTRA |
| 0082.000 | 1 | 75986-208.82 | | PLATTE<br>PLAQUE | PLATE<br>PLACA | PIASTRA |
| 0083.000 | 1 | 75986-208.43 | | BLATTFEDER<br>RESSORT PLAT | LEAF SPRING<br>MUELLE DE LAMINA | MOLLA PIATTA |
| 0084.000 | 1 | 75986-208.83 | | LAGER<br>ROULEMENT | BEARING<br>COJINETE, APOYO | BOCCOLA |
| 0085.000 | 1 | 75986-208.84 | | BANDFUEHRUNGSBOLZEN<br>GUIDE BAND PIVOT | TAPE GUIDE PIN<br>PIVOTE-GUIA DE CINTA | PERNO GUIDA-NASTRO |
| 0086.000 | 1 | 75986-208.85 | | ACHSE<br>AXE | SPINDLE; SHAFT<br>EJE | PERNO |
| 0087.000 | 1 | 75986-208.86 | | LAGER<br>ROULEMENT | BEARING<br>COJINETE, APOYO | BOCCOLA |

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0088.000 | 1 | 75986-208.87 | | LAGER<br>ROULEMENT | BEARING<br>COJINETE, APOYO | BOCCOLA |
| 0089.000 | 1 | 75986-208.88 | | LAGER<br>ROULEMENT | BEARING<br>COJINETE, APOYO | BOCCOLA |
| 0090.000 | 1 | 75986-208.89 | | ACHSE<br>AXE | SPINDLE; SHAFT<br>EJE | PERNO |
| 0100.000 | 2 | 75987-263.76 | 5X | SICHERUNGSSCHEIBE<br>CLIP | SAFETY PLATE<br>ARANDELA DE SEGURIDAD | RONDELLA DI SICUREZZA |
| 0101.000 | 2 | 75987-263.77 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0102.000 | 2 | 75987-263.79 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0103.000 | 2 | 75986-208.90 | | SCHIEBER<br>POUSSOIR | SLIDER<br>CORREDERA, CURSOR | CURSORE |
| 0104.000 | 2 | 75986-208.91 | | SCHIEBER<br>POUSSOIR | SLIDER<br>CORREDERA, CURSOR | CURSORE |
| 0105.000 | 2 | 75986-208.92 | | BREMSHEBEL<br>LEVIER DE FREIN | BRAKE LEVER<br>PALANCA DE FRENO | LEVA DEL FRENO |
| 0106.000 | 2 | 75987-263.83 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0107.000 | 2 | 75986-208.93 | | BREMSSOCKEL<br>BUTEE | BRACKE BASE | ZOCCOLO FRENO |
| 0108.000 | 2 | 75986-208.94 | | SPANNROLLENHEBEL<br>LEVIER GALET-TENDEUR | TENSION ROLLER LEVER<br>PLETINA TENSORA DE LA CORREA | LEVA RULLO TENSIONE |
| 0109.000 | 2 | 75987-263.86 | | STEUERHEBEL<br>LEVIER DE CONTROLE | CONTROL LEVER<br>PALANCA DE MANDO | LEVA DI COMANDO |
| 0110.000 | 2 | 75987-263.87 | | SPERRHEBEL<br>LEVIER DE BLOCAGE | LOCKING LEVER<br>PALANCA DE BLOQUEO | LEVA DI BLOCCAGGIO |
| 0111.000 | 2 | 75986-208.95 | | KURVENRAD<br>CAME | CURVED WHEEL<br>ENGRANAJE CON SURCO GUIA | RUOTA A CAMME |
| 0112.000 | 2 | 75987-263.89 | | KURVENRAD<br>CAME | CURVED WHEEL<br>ENGRANAJE CON SURCO GUIA | RUOTA A CAMME |
| 0113.000 | 2 | 75987-263.90 | | STEUERRAD<br>PIGNON DE CONTROL | CONTROL GEAR<br>POLEA DE MANDO | RUOTA DI COMANDO |
| 0114.000 | 2 | 75987-263.91 | | ZWISCHENRAD<br>ROUE INTERMEDIAIRE | IDLER WHEEL<br>POLEA INTERMEDIA | PULEGGIA INTERMEDIA |
| 0115.000 | 2 | 75987-263.92 | 3X | PLANETENRAD<br>SATELLITE | PLANET WHEEL<br>ENGRANAJE PLANETARIO | RUOTA SATELLITE |
| 0116.000 | 2 | 75986-208.96 | | KUPPLUNGSRAD<br>ROUE D'EMBRAYAGE | CLUTCH WHEEL<br>RUEDA DE EMBRAGUE | RUOTA FRIZIONE |
| 0117.000 | 2 | 75987-263.94 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0118.000 | 2 | 75987-263.95 | | KUPPLUNGSSCHIEBER<br>GLISSIERE D'EMBRAYAGE | CLUTCH SLIDER<br>CORREDERA DE EMBRAGUE | CURSORE FRIZIONE |
| 0119.000 | 2 | 75987-263.96 | | ANTRIEBSRAD<br>ROUE MOTRICE | DRIVE WHEEL<br>POLEA DE TRANSMISION | PULEGGIA DI TRAZIONE |
| 0120.000 | 2 | 75987-263.97 | | RINGRAD<br>ROUE DENTEE | RING WHEEL<br>ENGRANAJE EN ANILLO | RUOTA AD ANELLO |
| 0121.000 | 2 | 75987-263.98 | | SICHERUNGSSCHEIBE<br>CLIP | SAFETY PLATE<br>ARANDELA DE SEGURIDAD | RONDELLA DI SICUREZZA |
| 0122.000 | 2 | 75987-263.99 | | UMSTELLHEBEL<br>LEVIER | CHANGE-OVER LEVER<br>PALANCA DE CAMBIO | LEVA DEVIATRICE |
| 0123.000 | 2 | 75987-263.78 | | LAGERWINKEL<br>EQUERRE | BEARING BRACKET<br>ESCUADRA SOPORTE | SUPPORTO ANGOLATO |
| 0124.000 | 2 | 75987-264.01 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0125.000 | 2 | 75987-264.02 | | AUSLOESEHEBEL<br>LEVIER DE DECLENCHEMENT | RELEASE LEVER<br>PALANCA DE DESBLOQUEO | LEVA DI SBLOCCO |
| 0127.000 | 2 | 75987-264.95 | | ANTRIEBSRAD<br>ROUE MOTRICE | DRIVE WHEEL<br>POLEA DE TRANSMISION | PULEGGIA DI TRAZIONE |
| 0128.000 | 2 | 75986-208.97 | | ANTRIEBSRAD<br>ROUE MOTRICE | DRIVE WHEEL<br>POLEA DE TRANSMISION | PULEGGIA DI TRAZIONE |
| 0129.000 | 2 | 75987-264.06 | | UMSCHALTHEBEL (R)<br>LEVIER DE COMMUTATION | SWITCH-OVER LEVER<br>PALANCA CONMUTADORA | LEVA COMMUT. |
| 0130.000 | 2 | 75987-264.07 | | UMSCHALTHEBEL (L)<br>LEVIER DE COMMUTATION | SWITCH-OVER LEVER<br>PALANCA CONMUTADORA | LEVA COMMUT. |
| 0131.000 | 2 | 75987-264.08 | | LAGERPLATTE<br>PLAQUE DE ROULEMENT | BEARING PLATE<br>PLACA DE COJINETE | PIASTRA DI APPOGGIO |

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0132.000 | 2 | 75987-264.97 | | ANTRIEBSRIEMEN<br>COURROIE MOTRICE | DRIVE BELT<br>CORREA DE TRANSMISION | CINGHIA DI TRAZIONE |
| 0133.000 | 2 | 75987-264.10 | | CAPSTANROTOR KPL.<br>ROTEUR CAPSTAN | CAPSTAN-ROTOR CPL.<br>ROTOR DEL "CAPSTAN" | ROTORE CAPSTAN |
| 0134.000 | 2 | 75986-208.98 | | ANSCHLAGWINKEL<br>EQUERRE A CHAPEAU | END STOP BRACKET<br>ESCUADRA - TOPE | SUPP. ANG. ARRESTO |
| 0135.000 | 2 | 75986-208.99 | | CAPSTAN-ROTOR<br>ROTOR | CAPSTAN ROTOR<br>ROTOR DEL "CAPSTAN" | ROTORE CAPSTAN |
| 0136.000 | 2 | 75987-264.13 | | SCHEIBE<br>RONDELLE | WASHER<br>ARANDELA | RONDELLA |
| 0137.000 | 2 | 75987-264.98 | | RIEMENSCHEIBE<br>POULIE | PULLEY<br>POLEA | PULEGGIA CINGHIA |
| 0138.000 | 2 | 75986-209.00 | | LADERAD<br>GALET DE CHARGEMENT | LOADING WHEEL<br>ENGRANAJE ENHEBRADO/DESENHEB. | RUOTA DI CARICA |
| 0139.000 | 2 | 75987-264.16 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0140.000 | 2 | 75987-264.17 | | LADEHEBEL<br>LEVIER DE CHARGEMENT | LOADING LEVER<br>PALANCA ENHEBRADO/DESENHEB. | LEVA DI CARICA |
| 0141.000 | 2 | 75986-209.01 | | ZAHNSEGMENT<br>SEGMENT DENTE | TOOTHSECTIONAL<br>SEGMENTO DENTADO | SEGMENTO DENTATO |
| 0142.000 | 2 | 75986-208.46 | | LADEKURVENRAD<br>ROUE A CAME | CURVED LOADING WHEEL<br>ENGRANAJE-GUIA ENHEBR/DESENHEB. | RUOTA A CAMME CARICA |
| 0143.000 | 2 | 75987-264.20 | | LADERAD<br>GALET DE CHARGEMENT | LOADING WHEEL<br>ENGRANAJE ENHEBRADO/DESENHEB. | RUOTA DI CARICA |
| 0144.400 | 2 | 75987-264.21 | | STEUERHEBEL<br>LEVIER DE CONTROLE | CONTROL LEVER<br>PALANCA DE MANDO | LEVA DI COMANDO |
| 0145.000 | 2 | 75987-264.22 | | LADEHEBEL<br>LEVIER DE CHARGEMENT | LOADING LEVER<br>PALANCA ENHEBRADO/DESENHEB. | LEVA DI CARICA |
| 0146.000 | 2 | 75986-209.02 | | ZWISCHENRAD<br>ROUE INTERMEDIAIRE | IDLER WHEEL<br>POLEA INTERMEDIA | PULEGGIA INTERMEDIA |
| 0147.000 | 2 | 75986-209.03 | | SCHWENKRAD<br>ROUE MOBILE | SWIVEL WHEEL<br>ENGRANAJE CON PALANCA | PULEGGIA |
| 0148.000 | 2 | 75987-264.25 | | IMPULSKOPF<br>TETE D'IMPULSION | IMPULSE HEAD<br>CABEZA TACOMETRO "CAPSTAN" | TESTINA IMPULSI |
| 0149.000 | 2 | 75986-208.47 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0150.000 | 2 | 75987-263.03 | | DISTANZSCHRAUBE<br>VIS | SCREW<br>TORNILLO | VITA |
| 0151.000 | 2 | 75987-263.02 | | STOPPER<br>GOUJON | STOP MOTION<br>BLOQUEO | PERNO |
| 0201.000 | 3 | 75986-208.48 | | ABDECKPLATTE<br>CACHE | COVER PLATE<br>PLETINA SUPERIOR | PIASTRA COPERTURA |
| 0202.000 | 3 | 75986-209.04 | | CASSETTENSCHACHT<br>COMPARTIMENT CASS. | CASSETTE COMPARTMENT<br>COMPARTIMIENTO CASSETTE | VANO CASSETTA |
| 0203.000 | 3 | 75986-209.05 | | FUEHRUNG<br>GUIDE | GUIDE<br>GUIA | GUIDA |
| 0208.000 | 3 | 75986-209.06 | | HALTEWINKEL<br>ANGLE D'ARRET | STOP BRACKET<br>ESCUADRA SOPORTE | SUPPORTO |
| 0209.000 | 3 | 75986-208.50 | | CASSETTENHALTER<br>SUPPORT CASSETTE | CASSETTE HOLDER<br>PORTACASSETTE | SUPPORTO CASSETTA |
| 0210.000 | 3 | 75987-264.35 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0212.000 | 3 | 75987-264.37 | | ZUGFEDER<br>RESSORT A TRACTION | TENSION SPRING<br>MUELLE DE TRACCION | MOLLA DI TRAZIONE |
| 0213.000 | 3 | 75986-209.07 | | FUEHRUNG<br>GUIDE | GUIDE<br>GUIA | GUIDA |
| 0214.000 | 3 | 75987-264.39 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0215.000 | 3 | 75987-264.40 | | ENTRIEGELUNGSHEBEL<br>LEVIER DE DEVERROUILLAGE | LOCKING LEVER<br>PALANCA DE DESBLOQUEO | LEVA DI SBLOCCO |
| 0216.000 | 3 | 75987-264.41 | | SCHACHTFUEHRUNG L KPL.<br>GUIDE DE COMPARTIMENT | COMPARTMENT GUIDE<br>GUIA DE CAJETIN | GUIDA VANO |
| 0217.000 | 3 | 75987-264.42 | | SCHACHTFUEHRUNG L<br>GUIDE DE COMPARTIMENT | COMPARTMENT GUIDE<br>GUIA DE CAJETIN | GUIDA VANO |
| 0218.000 | 3 | 75987-264.43 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0219.000 | 3 | 75986-209.08 | | SCHACHTFUEHRUNG<br>GUIDE DE COMPARTIMENT | COMPARTMENT GUIDE<br>GUIA DE CAJETIN | GUIDA VANO |

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0221.000 | 3 | 75986-209.09 | | SCHIEBESCHALTER<br>INTERR. A COULISSE | SLIDING SWITCH<br>CONMUTADOR DESLIZANTE | INTERRUTTORE A CURSORE |
| 0229.000 | 3 | 75987-264.54 | | WELLE KPL.<br>GAMME D'ONDES | SPINDLE<br>EJE | ALBERO |
| 0230.000 | 3 | 75987-264.55 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0231.000 | 3 | 75987-264.56 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0232.000 | 3 | 75987-264.57 | | HEBEL<br>LEVIER | LEVER<br>PALANCA | LEVA |
| 0233.000 | 3 | 75987-264.58 | | SCHENKELFEDER<br>RESSORT A BRANCHES | LEG SPRING<br>MUELLE DE TORSION | MOLLA DI TORSIONE |
| 0234.000 | 3 | 75987-264.59 | | CASSETTENFUEHRUNG<br>GUIDE/GLISSIERE | CASSETTE DRIVE<br>GUIA-CASSETTE | GUIDA CASSETTA |
| 0235.000 | 3 | 27035-235.02 | | CASSETTENKLAPPE KPL.<br>COUV. COMP. CASS. | CASS. COMP. LID<br>TAPA ABATIBLE CASS. | SPORT. VANO CASSETTA |
| 0236.000 | 3 | 27123-703.00 | | FEDER<br>RESSORT | SPRING<br>MUELLE | MOLLA |
| 0240.000 | 3 | 75986-208.62 | | WINKEL<br>EQUERRE | BRACKET<br>ANGULO, ESCUADRA | SUPPORTO ANGOLATO |
| 0260.000 | 1 | 75986-208.59 | | SCHALTERPLATTE<br>PLATINE COMMANDE | SWITCHTING BOARD<br>C.I. CONMUT | PIASTRA COMMUTATORI |
| 0263.000 | | 75986-209.12 | | SENSOR BANDENDE<br>SENSEUR | SENSOR<br>SENSOR | SENSORE |
| 0264.000 | | 75986-209.13 | | SENSOR BANDANFANG<br>SENSEUR | SENSOR<br>SENSOR | SENSORE |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
|  | | |
| IC 1501 | 75987-460.13 | IC ON 2170 |
| IC 1502 | 75987-460.13 | IC ON 2170 |
| IC 2901 | 8305-073-814 | IC AN 3814 K MAT |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| | 75982-215.00 | TRANS.2 SD 636 |

## A 030 27505 - 078.01 Bedieneinheit / Keyboard unit / Unite de commande / Unita di comando

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG (D) | DESCRIPTION (GB)<br>DESIGNATION (F) | DENOMINAZIONE (I)<br>DENOMINACION (E) |
|---|---|---|---|---|---|---|
| 0001.000 | | 27032-214.01 | 2X | DISPLAYHALTER | DISPLAY HOLDER<br>FIXATION | SUPPORTO<br>SOPORTE |
| 0002.000 | | 27035-215.01 | | FLUORESZENZ-ANZEIGE | FLUORESCENT INDICATOR PAN<br>AFFICHEUR FLUORESCENT | DISPLAY FLUORESCENTE<br>INDICADOR FLUORESCENTE |
| 0003.000 | | 27035-216.01 | | FLUORESZENZ-ANZEIGE | FLUORESCENT INDICATOR PAN<br>AFFICHEUR FLUORESCENT | DISPLAY FLUORESCENTE<br>INDICADOR FLUORESCENTE |
| 0004.000 | | 27511-127.00 | 37X | TIPPTASTEN | BUTTON<br>TOUCHE | MICROTASTO<br>PULSADOR |
| 0005.000 | | 8140-526-401 | | DR AX 0411-GA 6,8UH | CHOKE<br>BOBINE | IMPEDANZA<br>BOBINA "CHOKE" |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| IC 3425 | 8305-011-387 | IC SBX 1494-14 SONY |
| R 3415 | 8765-097-013 | MSW AX 0204-GA 3,3 OHM |
| R 3443 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| R 3450 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 3458 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 3468 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| T 3417 | 8303-293-875 | TRANS.BC 875/877/879 SIE |
| T 3418 | 8303-293-876 | TRANS.BC 876 WW.BC 878 |

## A 031 27505 - 071.01 Chassisplatte I / Chassis board I / C. I. principal I / Piastra telaio I

| Pos.<br>Nr.<br>Pos.<br>No. | Abb<br>Nr.<br>Fig.<br>No. | Sachnummer<br>Part.No.<br>Références<br>No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION Ⓖⓑ<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0001.000 | | 09621-113.02 | | SICHERUNGSHALTER<br>CONTACT DE FUSIBLE | FUSE HOLDER<br>PZA.METAL.P.PORTAFUSIBLE | SUPPORTO FUSIBILE |
| 0002.000 | | 27035-156.00 | ⚠ | ABSCHIRMUNG KPL.<br>BLINDAGE | SCREENING, SHIELDING<br>BLINDAJE | SCHERMO |
| 0003.000 | | 27200-166.00 | | KUEHLBLECH<br>RADIATEUR | HEAT SINK<br>DISIPADOR TERMICO | LAMIERINO DISSIPAZ. TERMI |
| 0004.000 | | 27511-454.00 | | MEHRFACHBUCHSE 9-POL.<br>PRISE MULTIPLE | POLY SOCKET<br>CONECTOR MULTIPLE | PRESA MULTIPLA |
| 0005.000 | | 29303-153.01 | | MONTAGECLIP<br>ETRIER DE MONTAGE | ASSEMBLY CLIP<br>CLIP DE CONTACTO | CLIP DI MONTAGGIO |
| 0006.000 | | 29303-153.02 | | MONTAGECLIP<br>ETRIER DE MONTAGE | ASSEMBLY CLIP<br>CLIP DE CONTACTO | CLIP DI MONTAGGIO |
| 0007.000 | | 29303-153.12 | | MONTAGECLIP<br>ETRIER DE MONTAGE | ASSEMBLY CLIP<br>CLIP DE CONTACTO | CLIP DI MONTAGGIO |
| 0008.000 | | 29303-452.02 | ⚠ | NETZSTECKER-UNTERTEIL KPL<br>FICHE SECTEUR | MAINS PLUG - LOWER PART<br>PZA.PLAST.SEPARADOR | PARTE INFER. CONNETTRETE |
| 0009.000 | | 8130-900-104 | | IC-FASSUNG DILB 28 P108<br>SOCLE | IC-SOCKET<br>ZOCALO PARA IC | ZOCCOLO IC |
| 0010.000 | | 8130-900-137 | | HPT-SOCKEL QILE 68-P410T<br>EMBASE | HPT-SOCKET QILE 68-P410T<br>CONECTOR | PRESA |
| 0011.000 | | 8140-601-422 | ⚠ | WANDLERTRAFO<br>TRANSFO | TRANSFORMER<br>TRANSFORMADOR | MODULO TRASFORMATORE |
| 0012.000 | | 8306-000-115 | ⚠ | OPTOKOPPLER CNY 17G-F1/F2<br>COUPLEUR-OPTO | OPTOCOUPLER<br>OPTOACOPLADOR | OPTOACCOPPIATORE |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| C 145 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 151 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 154 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 158 | 8684-367-148 | KERKO.5 4700PF 20% |
| C 169 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 179 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 185 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 230 | 8684-367-124 | KERKO.5 1000PF 20% |
| C 235 | 8684-367-124 | KERKO.5 1000PF 20% |
| C 253 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 302 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 370 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 372 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 381 | 8515-722-469 | MKP 10 0,068UF 10% 400V |
| C 385 ⚠ | 8511-793-018 | MP 3 0,1 UF 20% 250VW |
| C 387 ⚠ | 8660-098-234 | SI-KERKO B-SS 1000PF 20% |
| C 388 ⚠ | 8660-098-234 | SI-KERKO B-SS 1000PF 20% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| C 390 ⚠ | 8660-098-238 | SI-KERKO B-SS 2200PF 20% |
| C 392 ⚠ | 8511-793-018 | MP 3 0,1 UF 20% 250VW |
| C 413 | 8452-027-012 | ELKO 10/V 220UF 25V |
| C 417 | 8452-027-012 | ELKO 10/V 220UF 25V |
| C 427 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 437 | 8452-027-044 | ELKO 5/V 470UF 50V |
| C 452 | 8452-027-014 | ELKO 2/V 470UF 25V |
| C 453 | 8452-027-014 | ELKO 2/V 470UF 25V |
| C 465 | 8452-027-026 | ELKO 14/V 1000UF 40 |
| C 467 | 8452-027-014 | ELKO 2/V 470UF 25V |
| C 497 | 8452-027-014 | ELKO 2/V 470UF 25V |
| C 502 | 8452-027-012 | ELKO 10/V 220UF 25V |
| C 503 | 8452-027-012 | ELKO 10/V 220UF 25V |
| C 541 | 8415-162-246 | ELKO GRP 10UF 50V |
| D 110 | 8309-215-006 | DIODE 1 N 4001 -CA |
| D 127 | 8309-214-218 | DIODE TD 129 UNI/1N 1 48/ |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION ⒼⒷ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| D 128 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 130 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 141 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 144 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 145 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 151 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 152 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 169 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 179 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 212 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 214 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 215 | 8309-214-218 | DIODE TD 129 UNI/1N 4148/ |
| D 240 | 8309-198-085 | DIODE BAT 85 |
| D 248 | 8309-215-006 | DIODE 1 N 4001 |
| D 365 | 8309-516-851 | DIODE BYT 52 D |
| D 369 | 8309-516-851 | DIODE BYT 52 D |
| D 380 | 8309-516-852 | DIODE BYT 52 M |
| D 410 | 8309-518-021 | DIODE BYV 10-60 |
| D 415 | 8309-518-021 | DIODE BYV 10-60 |
| D 418 | 8309-720-112 | Z DIODE 12 C 0,5W |
| D 423 | 8309-516-852 | DIODE BYT 52 M |
| D 425 | 8309-516-852 | DIODE BYT 52 M |
| D 435 | 8309-516-282 | DIODE BYV 28/200 |
| D 450 | 8309-220-340 | DIODE SB 340 |
| D 457 | 8309-720-027 | Z DIODE 2,7 C 0,5W |
| D 463 | 8309-517-020 | DIODE BYW 29-150 F |
| D 490 | 8309-198-085 | DIODE BAT 85 |
| D 495 | 8309-516-282 | DIODE BYV 28/200 |
| D 506 | 8309-198-085 | DIODE BAT 85 |
| D 512 | 8309-720-064 | Z DIODE 6,2 B 0,5W |
| DR 385 | 09266-136.97 | FUNKENTSTOERDROSSEL |
| DR 392 | 09266-136.97 | FUNKENTSTOERDROSSEL |
| GL 395 | 8308-560-384 | GLR.SKB 380 C1500 L5B |
| IC 120 | 8305-199-373 | IC SN 74 LS 373 N |
| IC 155 | 19799-261.96 | IC TL 082 |
| IC 185 | 19798-003.70 | IC 27256-250 NS (EPROM) |
| IC 190 | 8305-158-208 | IC SDA 2087 (U4) |
| IC 195 | 8305-005-526 | IC HEF 4526 BP |
| IC 210 | 8305-204-357 | IC LM 358 N |
| IC 320 | 8305-104-830 | IC BA 6432 S R'OHM |
| IC 355 | 8305-334-605 | IC TDA 4605 |
| IC 400 | 8305-440-431 | IC TL 431 CLP RP |
| IC 431 | 8305-306-031 | IC ZTN 33 A SB 54547 |
| IC 450 | 8305-204-964 | IC L 4964 |
| IC 500 | 8305-204-455 | IC L 455 |
| DR 385 | 09266-136.97 | FUNKENTSTOERDROSSEL ⚠ |
| DR 392 | 09266-136.97 | FUNKENTSTOERDROSSEL ⚠ |
| L 125 | 8140-525-991 | DR N-GR 6,8UH |
| L 184 | 8104-982-014 | DAEMPFUNGSPERLE |
| L 185 | 8140-525-991 | DR N-GR 6,8UH |
| L 381 | 8104-982-014 | DAEMPFUNGSPERLE |
| L 450 | 09266-129.02 | SPEICHERDROSSEL |
| L 451 | 8140-525-991 | DR N-GR 6,8UH |
| L 452 | 8140-601-353 | SIEBDROSSEL |
| L 465 | 8140-601-353 | SIEBDROSSEL |
| Q 190 | 8382-249-597 | QUARZ 12,0 MHZ |
| R 104 | 8765-097-049 | MSW AX 0204-GA 100 OHM |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION ⒼⒷ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| R 105 | 8765-097-049 | MSW AX 0204-GA 100 OHM |
| R 125 ⚠ | 8311-201-973 | PTC 1,8 OHM Q63100-T2390 |
| R 131 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 140 | 8765-097-049 | MSW AX 0204-GA 100 OHM |
| R 141 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 144 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 150 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 172 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 210 | 8765-097-297 | MSW AX 0204-GA 10 KOHM |
| R 220 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 221 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 247 | 8765-097-067 | MSW AX 0204-GA 560 OHM |
| R 253 ⚠ | 8766-701-041 | KSW SI A 47 OHM 5% -GA |
| R 263 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 302 | 8765-097-297 | MSW AX 0204-GA 10KOHM |
| R 325 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 365 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 367 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 405 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 410 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% -GA |
| R 412 ⚠ | 8701-118-001 | KSW SI B 1 OHM 5% -GA |
| R 413 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 415 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% -GA |
| R 416 ⚠ | 8701-118-001 | KSW SI B 1 OHM 5% -GA |
| R 417 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 420 ⚠ | 8311-201-973 | PTC 1,8 OHM Q63100-T2390 |
| R 428 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 430 | 8765-097-097 | MSW AX 0204-GA 10 KOHM |
| R 431 | 8765-097-095 | MSW AX 0204-GA 8,2 KOHM |
| R 435 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% -GA |
| R 450 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% -GA |
| R 463 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% -GA |
| R 468 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 495 ⚠ | 8701-118-017 | KSW SI B 4,7 OHM 5% |
| R 510 | 8765-098-025 | MSW AX 0207-GA 10 OHM |
| SI 385 ⚠ | 8315-618-002 | FS.1,25 A/T |
| T 110 | 8303-275-328 | TRANS.BC 328-40 |
| T 113 | 8303-207-548 | TRANS.BC 548 C |
| T 130 | 8303-207-548 | TRANS.BC 548 C |
| T 131 | 8303-207-548 | TRANS.BC 548 C |
| T 147 | 8303-207-548 | TRANS.BC 548 C |
| T 158 | 8303-207-548 | TRANS.BC 548 C |
| T 170 | 8303-207-548 | TRANS.BC 548 C |
| T 177 | 8303-207-548 | TRANS.BC 548 C |
| T 180 | 8303-205-558 | TRANS.BC 558 B |
| T 220 | 8303-207-548 | TRANS.BC 548 C |
| T 221 | 8303-207-548 | TRANS.BC 548 C |
| T 230 | 8303-207-548 | TRANS.BC 548 C |
| T 235 | 8303-207-548 | TRANS.BC 548 C |
| T 240 | 8303-293-875 | TRANS.BC 875/877/879 |
| T 250 | 8303-207-548 | TRANS.BC 548 C |
| T 260 | 8303-205-558 | TRANS.BC 558 B |
| T 270 | 8303-205-558 | TRANS.BC 558 B |
| T 375 | 8302-269-092 | TRANS.BUZ 90 A |
| T 447 | 8303-206-548 | TRANS.BC 548 C |
| T 460 | 8303-206-548 | TRANS.BC 548 C |
| T 475 | 8303-206-548 | TRANS.BC 548 C |
| T 480 | 8303-207-548 | TRANS.BC 548 C |
| T 487 | 8303-206-548 | TRANS.BC 548 C |
| TY 510 ⚠ | 8309-503-642 | Thyristor 2 N 6400 |

# A 032 27505 - 072.01 Chassisplatte II / Chassis board II / C. I. principal II / Piastra telaio II

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0001.000 | | 27400-220.03 | | LITHIUM-BATTERIE CR 2032<br>PILE AU LITHIUM | LITHIUM BATTERY<br>BATTERIA | BATTERIA AL LITIO |
| 0002.000 | | 8130-900-104 | | IC-FASSUNG DILB 28 P108<br>SOCLE | IC-SOCKET<br>ZOCALO PARA IC | ZOCCOLO IC |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| C 590 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| C 572 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 612 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 710 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 732 | 8415-162-132 | ELKO GRP 47UF 25V |
| CC 582 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 593 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 598 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 600 | 8672-260-131 | KEFQ 1206 56PF 5% |
| CC 603 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 605 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 621 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 650 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 652 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 655 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 657 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 658 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 677 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 680 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 687 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 690 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 691 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 693 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 695 | 8672-260-125 | KEFQ 1206 18PF 5% |
| CC 697 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 698 | 8672-260-125 | KEFQ 1206 18PF 5% |
| CC 700 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 706 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 708 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 712 | 8672-267-183 | KEFQ 1206 0,068UF 10% |
| CC 718 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 730 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 743 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 750 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 753 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 755 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 756 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 757 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CD 565 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 566 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 592 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 593 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 620 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 621 | 8309-313-099 | CHIP-DIODE BAV 99 VAL |
| CD 695 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 760 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CR 557 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 558 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 559 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 560 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 561 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 566 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 567 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 568 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 569 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 570 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 571 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 580 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 592 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 593 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 606 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 607 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 609 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 610 | 8706-297-143 | R-CHIP 1206 820 KOHM 5% |
| CR 618 | 8706-297-117 | R-CHIP 1206 68 KOHM 5% |
| CR 620 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 625 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 627 | 8706-297-135 | R-CHIP 1206 390 KOHM 5% |
| CR 628 | 8706-297-125 | R-CHIP 1206 150 KOHM 5% |
| CR 630 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 632 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 635 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 636 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 650 | 8706-297-118 | R-CHIP 1206 75 KOHM 5% |
| CR 651 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 652 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 673 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 690 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 695 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 700 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 702 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 703 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 707 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 710 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 715 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 717 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 718 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 720 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 722 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 723 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 725 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 732 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 735 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 737 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 738 | 8706-297-053 | R-CHIP 1206 150 OHM 5% |
| CR 740 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 745 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 748 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 750 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 752 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 754 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 757 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 767 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 770 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 771 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CT 559 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 630 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 735 | 8301-004-848 | SMD-TRANS.BC 848 B |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CT 738 | 8301-003-858 | SMD-TRANS.BC 858 B |
| CT 770 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CIC 555 | 8305-780-373 | IC M 74 LS 373 M1 |
| IC 570 | 19798-004.30 | IC 27512-250 NS (EPROM) |
| IC 580 | 8305-108-582 | IC PCD 8582 |
| IC 590 | 8305-108-583 | IC PCF 8583 |
| CIC 600 | 8305-158-208 | IC SDA 2087 (U4) |
| IC 690 | 8305-303-580 | IC SAA 5231 |
| IC 725 | 8305-303-589 | IC SAA 5243 P/E |
| IC 730 | 8305-004-265 | IC SRAM 8KX8 LOW POWER |
| IC 750 | 8305-076-308 | IC AN 6308 |
| IC 755 | 8305-076-308 | IC AN 6308 |
| IC 760 | 8305-365-114 | IC TEA 5114 A |
| L 572 | 8104-982-014 | DAEMPFUNGSPERLE |

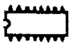
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| L 573 | 8140-525-991 | DR N-GR 6,8UH |
| L 687 | 8140-526-907 | DR N-GR 15UH |
| L 700 | 19202-574.97 | SPULE * |
| L 715 | 8140-525-991 | DR N-GR 6,8UH |
| L 743 | 8140-526-924 | DR S-GR 12,5UH |
| Q 590 | 8382-200-797 | SCHWINGQUARZ 32,768 KHZ |
| Q 600 | 8382-249-597 | QUARZ 12,0 MHZ |
| Q 685 | 8382-251-397 | QUARZ 13,875 MHZ |
| Q 695 | 8382-246-096 | QUARZ 6,0 MHZ |
| R 746 | 8792-002-135 | ESTR.S6 1 KOHM LIN |

## A 035 27505 - 075.01 Video 1

| Pos.<br>Nr.<br>Pos.<br>No. | Abb<br>Nr.<br>Fig.<br>No. | Sachnummer<br>Part.No.<br>Références<br>No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0001.000 | | 27511-453.00 | | SCART-BUCHSE JCC5<br>EMBASE PERITELEVISION | SCART-SOCKET<br>CONECTOR SCART | PRESA SCART |
| 0002.000 | | 29303-117.05 | 2X | VERZOEGERUNGSLEITUNG<br>LIGNE A RETARD | DELAY LINE<br>LINEA DE RETARDO | LINEA DI RITARDO |
| 0003.000 | | 8140-601-520 | | VERZOEG.-LTG.SDL 2055<br>LIGNE A RETARD | DELAY LINE<br>LINEA DE RETARDO | LINEA DI RITARDO |
| 0004.000 | | 8140-601-522 | | VERZOEG.-LTG.SDL 4206<br>LIGNE A RETARD | DELAY LINE<br>LINEA DE RETARDO | LINEA DI RITARDO |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| C 2475 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| C 2382 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2432 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 2450 | 8415-162-132 | ELKO GRP 47UF 25V |
| CC 2305 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2310 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2315 | 8672-260-131 | KEFQ 1206 56PF 5% |
| CC 2316 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2320 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2323 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2330 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2332 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2345 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 2353 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 2355 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2360 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 2366 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2370 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2380 | 8672-267-271 | KEFQ 1206 0,022UF 20% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CC 2385 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2425 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2442 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 2448 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2451 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2455 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2457 | 8672-260-131 | KEFQ 1206 56PF 5% |
| CC 2458 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2467 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2470 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2478 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2480 | 8672-260-140 | KEFQ 1206 330PF 5% |
| CC 2482 | 8672-260-140 | KEFQ 1206 330PF 5% |
| CC 2487 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 2489 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2508 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2513 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2517 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2522 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2525 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2530 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2532 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2535 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2537 | 8672-260-135 | KEFQ 1206 120PF 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CC 2540 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2543 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2548 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2555 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2560 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2583 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2586 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2590 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2592 | 8672-260-138 | KEFQ 1206 220PF 5% |
| | | |
| CD 2540 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2541 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
|  | | |
| CIC 232 | 8305-796-989 | IC MSM 6989 RSI MS-K SOP |
| CIC 238 | 8305-777-053 | SMD IC PC 74 HC 4053 T |
| CIC 247 | 8305-796-967 | IC MSM 6967 RSI MS-K SOP |
| IC 2305 | 8305-205-098 | IC HEF 4094 VAL/CD 4094B |
| IC 2430 | 8305-104-821 | IC BA 7021 R'OHM |
| | | |
| CR 2301 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2302 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2303 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2304 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2305 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2306 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2307 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2308 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2316 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2322 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2332 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 2335 | 8706-297-119 | R-CHIP 1206 82 KOHM 5% |
| CR 2337 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2339 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2342 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2344 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2346 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2347 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 2348 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2351 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 2354 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2355 | 8706-297-119 | R-CHIP 1206 82 KOHM 5% |
| CR 2357 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2358 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2360 | 8706-297-119 | R-CHIP 1206 82 KOHM 5% |
| CR 2361 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2363 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2365 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2366 | 8706-297-051 | R-CHIP 1206 120 OHM 5% |
| CR 2367 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2370 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2372 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2374 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2375 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2377 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2378 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2380 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2382 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2384 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 2385 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 2387 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2388 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2390 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2391 | 8706-297-119 | R-CHIP 1206 82 KOHM 5% |
| CR 2393 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2394 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2397 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2400 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2401 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 2402 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2406 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2407 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2410 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2417 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2418 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2420 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2422 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2423 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2435 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2455 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2461 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2470 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 2478 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2480 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2485 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2487 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2489 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 2490 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 2492 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 2493 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 2502 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 2503 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2505 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2507 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 2508 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 2513 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2515 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2520 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2521 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2522 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 2523 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2525 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2527 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 2528 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2530 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2532 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2535 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2538 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2545 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2547 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2548 | 8706-297-091 | R-CHIP 1206 5,6 KOHM 5% |
| CR 2551 | 8706-297-091 | R-CHIP 1206 5,6 KOHM 5% |
| CR 2554 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2555 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2557 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2558 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2559 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 2560 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2590 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2592 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2593 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| | | |
| CT 2310 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2316 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2340 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2342 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2350 | 8301-185-020 | SMD-TRANS.BFS 20 OM4 158 |
| CT 2355 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2357 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2363 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2366 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2385 | 8301-130-550 | SMD-TRANS.BF 550 |
| CT 2387 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2390 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2395 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2400 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2401 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2402 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2405 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2407 | 8301-185-020 | SMD-TRANS.BFS 20 OM4 158 |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CT 2410 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2420 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2435 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2440 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2445 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2455 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2460 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2485 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 2490 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2505 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2515 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2520 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2530 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2535 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 2545 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 2550 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2555 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 2560 | 8301-000-848 | SMD-TRANS.BC 848 |
| CL 2315 | 8140-525-319 | L-CHIP 47UH |
| CL 2316 | 8140-525-319 | L-CHIP 47UH |
| CL 2455 | 8140-525-319 | L-CHIP 47UH |
| CL 2457 | 8140-525-319 | L-CHIP 47UH |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CL 2487 | 8140-526-925 | L-CHIP 1UH |
| L 2508 | 19202-567.97 | SPULE 10UH 7X7 |
| L 2510 | 19202-566.97 | SPULE |
| L 2512 | 19202-566.97 | SPULE |
| L 2537 | 19202-566.97 | SPULE |
| L 2574 | 8140-525-862 | DR N-GR 68UH |
| L 2582 | 8140-525-991 | DR N-GR 6,8UH |
| L 2584 | 8140-525-865 | DR N-GR 22MH |
| Q 2475 | 8382-333-133 | QUARZ 13,300857MHZ |
| R 2310 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 2340 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 2345 | 8792-002-125 | ESTR.S6 470 OHM LIN |
| R 2350 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 2353 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 2395 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 2460 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 2517 | 8792-002-017 | ESTR.S6 220 OHM LIN |
| R 2550 | 8792-002-154 | ESTR.S6 22 KOHM LIN |

## A 036 27505 - 076.01 Video 2

| Pos.<br>Nr.<br>Pos.<br>No. | Abb<br>Nr.<br>Fig.<br>No. | Sachnummer<br>Part.No.<br>Références<br>No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0001.000 | | 8140-601-523 | | VERZOEG.-LTG.SDL 4196 (F2915)<br>LIGNE A RETARD | DELAY LINE<br>LINEA DE RETARDO | LINEA DI RITARDO |
| 0002.000 | | 8140-601-521 | 2X | VERZOEG.-LTG.SDL 2234 (F2810/2910)<br>LIGNE A RETARD | DELAY LINE<br>LINEA DE RETARDO | LINEA DI RITARDO |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| C 2609 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2663 | 8558-567-020 | KP E 620PF 2,5% 63V |
| C 2678 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| C 2787 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 2807 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 2830 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 2840 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 2845 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| C 2861 | 8558-567-043 | KP E 5600PF 2,5% 63V |
| C 2862 | 8558-567-027 | KP E 1200PF 2,5% 63V |
| C 2906 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 2945 | 8415-162-132 | ELKO GRP 47UF 25V |
| C 2965 | 8415-162-246 | ELKO GRP 10UF 50V |
| CC 2620 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2628 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 2630 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2631 | 8672-160-124 | KEFQ 0805 15PF 5% |
| CC 2632 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 2633 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2635 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2640 | 8672-160-124 | KEFQ 0805 15PF 5% |
| CC 2642 | 8672-260-138 | KEFQ 1206 220PF 5% |

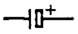
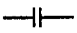
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CC 2643 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 2647 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 2650 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2652 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2655 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 2664 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2677 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2685 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2695 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2696 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2698 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 2700 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2705 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2710 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 2713 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2719 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2722 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2727 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2730 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2732 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2740 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2748 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2764 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 2772 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CC 2778 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2782 | 8672-267-152 | KEFQ 1206 3300PF 10% |
| CC 2800 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2802 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2805 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2822 | 8672-260-131 | KEFQ 1206 56PF 5% |
| CC 2844 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2853 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2857 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 2858 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 2859 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 2860 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2890 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2905 | 8672-267-183 | KEFQ 1206 0,068UF 10% |
| CC 2913 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2930 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2933 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2935 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 2937 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 2947 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2952 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2956 | 8672-260-133 | KEFQ 1206 82PF 5% |
| —▶\|— | | |
| CD 2807 | 8309-401-683 | MELF-DIODE RLS 135R'OHM |
| CD 2817 | 8309-401-683 | MELF-DIODE RLS 135R'OHM |
| CD 2832 | 8309-401-683 | MELF-DIODE RLS 135R'OHM |
| CD 2840 | 8309-401-683 | MELF-DIODE RLS 135R'OHM |
| CD 2859 | 8309-401-683 | MELF-DIODE RLS 135R'OHM |
| —▭— | | |
| CR 2608 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2609 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2610 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 2611 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2612 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2613 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2615 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2617 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2623 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2624 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2625 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2627 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2633 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2640 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2647 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2652 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 2654 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2655 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 2657 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2662 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2663 | 8706-297-260 | R-CHIP 1206 300 OHM 2% |
| CR 2664 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2665 | 8706-297-277 | R-CHIP 1206 1,5 KOHM 2% |
| CR 2667 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2672 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2680 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2682 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2683 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2686 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 2688 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 2690 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2693 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2695 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2696 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2697 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2698 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2700 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2702 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2705 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2708 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2711 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 2715 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 2717 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 2720 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 2724 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2725 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2727 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2734 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2735 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2742 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2743 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2745 | 8706-297-139 | R-CHIP 1206 560 KOHM 5% |
| CR 2747 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2749 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 2750 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 2752 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2754 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2755 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2757 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2760 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2761 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 2762 | 8706-297-131 | R-CHIP 1206 270 KOHM 5% |
| CR 2764 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2765 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2767 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 2770 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 2777 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 2778 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2780 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2782 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2783 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2785 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2790 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2791 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 2792 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2793 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 2794 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2795 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2796 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 2797 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2798 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 2800 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2803 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2804 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2807 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2808 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2810 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2815 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2817 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2819 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2820 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2822 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 2825 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2827 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2828 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2830 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2832 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2833 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2835 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2837 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2838 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2853 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2854 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 2855 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2856 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2859 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2860 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2869 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2872 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2877 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2878 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2886 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 2890 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2900 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2901 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |

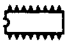
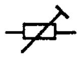
| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 2906 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 2908 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2910 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2912 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2914 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2915 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 2916 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2917 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2918 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2919 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2920 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2921 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2922 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2930 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2932 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2933 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 2935 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2937 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2940 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2942 | 8706-297-117 | R-CHIP 1206 68 KOHM 5% |
| CR 2944 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2950 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2952 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2953 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2955 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2956 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2958 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2960 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2965 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2966 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 2973 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2975 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CT 2610 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2617 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 2662 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2683 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2695 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2698 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2725 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2754 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2755 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2760 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2765 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2777 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2780 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2790 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2793 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2795 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2810 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2815 | 8301-000-848 | SMD-TRANS.BC 848 |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CT 2819 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2820 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2827 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2837 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2853 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2910 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2965 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2973 | 8301-000-848 | SMD-TRANS.BC 848 |
| F 2825 | 8140-601-424 | FILTER 5MHZ-LPF |
| F 2835 | 8140-601-423 | FILTER 3MHZ-LPF |
| CIC 287 | 8305-777-053 | SMD IC PC 74 HC 4053 T |
| IC 2620 | 8305-076-308 | IC AN 6308 |
| IC 2800 | 8305-076-308 | IC AN 6308 |
| IC 2805 | 8305-205-098 | IC HEF 4094 VAL/CD 4094B |
| IC 2900 | 8305-104-821 | IC BA 7021 R'OHM |
| L 2627 | 19202-581.97 | SPULE * |
| CL 2632 | 8140-525-319 | L-CHIP 47UH |
| CL 2633 | 8140-525-319 | L-CHIP 47UH |
| L 2640 | 19202-582.97 | SPULE |
| CL 2695 | 8140-525-329 | L-CHIP 22UH |
| L 2817 | 19202-572.97 | SPULE * |
| CL 2822 | 8140-525-319 | L-CHIP 47UH |
| R 2685 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |
| R 2692 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 2707 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 2722 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 2768 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |
| R 2865 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 2867 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 2870 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 2873 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 2880 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2882 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2883 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2885 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2888 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2892 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2893 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2895 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 2945 | 8792-002-151 | ESTR.S6 10 KOHM LIN |

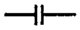
| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D) DESCRIPTION (GB) DENOMINAZIONE (I) DESIGNATION (F) DENOMINACION (E) |
|---|---|---|
|  |  | |
| C 3376 | 8452-965-135 | ELKO GRM 100UF 25V |
| CC 3005 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3012 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 3016 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 3025 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3030 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3038 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3050 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3061 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3067 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 3068 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 3078 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3094 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3100 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 3108 | 8672-260-131 | KEFQ 1206 56PF 5% |
| CC 3110 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3125 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3130 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 3140 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3145 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3179 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3199 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 3264 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3265 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3268 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 3271 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 3276 | 8672-260-128 | KEFQ 1206 33PF 5% |
| CC 3280 | 8672-260-128 | KEFQ 1206 33PF 5% |
| CC 3281 | 8672-260-128 | KEFQ 1206 33PF 5% |
| CC 3285 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3287 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3295 | 8672-260-125 | KEFQ 1206 18PF 5% |
| CC 3296 | 8672-367-291 | KEFQ 1210 0,22 UF 20% |
| CC 3297 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3311 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3317 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3318 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3320 | 8672-367-291 | KEFQ 1210 0,22 UF 20% |
| CC 3330 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3337 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3340 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3341 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3343 | 8672-367-291 | KEFQ 1210 0,22 UF 20% |
| CC 3347 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3355 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3365 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3370 | 8672-260-125 | KEFQ 1206 18PF 5% |
| CC 3371 | 8672-367-291 | KEFQ 1210 0,22 UF 20% |
| CC 3375 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3379 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3382 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3385 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| | | |
| CD 3055 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3088 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3118 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3157 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3292 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3365 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| | | |
| CR 3010 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3018 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3020 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3021 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3022 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 3023 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 3025 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D) DESCRIPTION (GB) DENOMINAZIONE (I) DESIGNATION (F) DENOMINACION (E) |
|---|---|---|
| CR 3030 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3031 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3033 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 3035 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3037 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3038 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 3040 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3045 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3047 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3049 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3050 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 3052 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3055 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3057 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3060 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3061 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 3063 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3065 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3067 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3070 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3071 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3073 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3075 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3076 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 3078 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3080 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3085 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3088 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3090 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3093 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3094 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 3096 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3097 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3100 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3102 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 3103 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3105 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3107 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3108 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3110 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3112 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3115 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3118 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3120 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3124 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3125 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 3127 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 3128 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3130 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 3132 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3133 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3135 | 8706-297-073 | R-CHIP |
| CR 3137 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 3138 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 3142 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3147 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3148 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3150 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3151 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3154 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3155 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3157 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3258 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3260 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3263 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3265 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3266 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3283 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3285 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3287 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3290 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 3292 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3294 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 3295 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3299 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3300 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3301 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3303 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3305 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3307 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 3311 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3313 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3315 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3323 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3325 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3327 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 3330 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3332 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3333 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3335 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3337 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3347 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 3350 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3352 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3357 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3358 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3360 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3365 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3367 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 3370 | 8706-297-000 | R-CHIP 1206 0 OHM |
| | | |
| CT 3020 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3025 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3033 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3035 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3040 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 3045 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3047 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3052 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 3057 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 3058 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3067 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3070 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3073 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3080 | 8301-130-550 | SMD-TRANS.BF 550 |
| CT 3090 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 3091 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3100 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3102 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3105 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3112 | 8301-130-550 | SMD-TRANS.BF 550 |

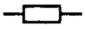
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CT 3115 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3120 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 3122 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3130 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3132 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3135 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3142 | 8301-130-550 | SMD-TRANS.BF 550 |
| CT 3155 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3260 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3265 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3290 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| T 3292 | 8303-283-338 | TRANS.BC 338-40 |
| CT 3297 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 3305 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3315 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3325 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3333 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3350 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 3355 | 8301-006-848 | SMD-TRANS.BC 848 C |
| T 3365 | 8303-283-338 | TRANS.BC 338-40 |
|  | | |
| CIC 315 | 8305-777-053 | SMD IC 9C 74 HC 4053 T |
| IC 3005 | 8305-205-098 | IC HEF 4094 VAL/CD 4094B |
| | | |
| CL 3016 | 8140-525-336 | L-CHIP 820UH |
| L 3035 | 19202-569.97 | SPULE * |
| L 3045 | 07202-384.97 | LAUFZEIT-SPULE * |
| L 3047 | 19202-567.97 | SPULE 10UH 7X7 |
| CL 3067 | 8140-525-332 | L-CHIP 12UH |
| L 3076 | 19202-569.97 | SPULE * |
| L 3080 | 07202-384.97 | LAUFZEIT-SPULE * |
| L 3096 | 19202-579.97 | SPULE * |
| CL 3100 | 8140-525-332 | L-CHIP 12UH |
| L 3108 | 19202-567.97 | SPULE 10UH 7X7 |
| L 3112 | 07202-384.97 | LAUFZEIT-SPULE * |
| L 3115 | 07202-043.97 | LW - OSZILLATOR - ZUSATZ- |
| L 3138 | 19202-567.97 | SPULE 10UH 7X7 |
| L 3142 | 19202-567.97 | SPULE 10UH 7X7 |
| L 3175 | 19202-576.97 | SPULE * |
| L 3176 | 19202-565.97 | SPULE 7X7 * |
| L 3232 | 8140-525-862 | DR N-GR 68UH |
| CL 3307 | 8140-525-337 | L-CHIP 4,7UH |
| CL 3327 | 8140-525-337 | L-CHIP 4,7UH |
| L 3376 | 8140-526-903 | DR N-GR 33UH |
| L 3380 | 8140-526-903 | DR N-GR 33UH |
|  | | |
| R 3122 | 8792-002-017 | ESTR.S6 220 OHM LIN |

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0001.000 | | 27511-470.00 | | KLINKENBUCHSE D 6,4 | MINIATURE SOCKET<br>EMBASE JACK | PRESA JACK<br>CONECTOR HEMBRA PARA JACK |
| 0002.000 | | 27511-468.00 | | S-VHS BUCHSE | S-VHS-SOCKET<br>S-VHS-EMBASE | S-VHS-PRESA<br>S-VHS-CONECTOR |
| 0003.000 | | 27511-467.00 | | CINCHBUCHSE 3-FACH | CINCH SOCKET<br>PRISE CINCH | PRESA CINCH<br>CONECT. CINCH |
| 0004.000 | | 27511-465.00 | | SCART-BUCHSE | SCART SOCKET<br>EMBASE PERITELEVISION | PRESA SCART<br>CONECTOR SCART |
| 0005.000 | | 27511-468.00 | 2X | S-VHS BUCHSE | S-VHS-SOCKET<br>S-VHS-EMBASE | S-VHS-PRESA<br>S-VHS-CONECTOR |
| 0006.000 | | 27511-215.00 | | POTENTIOMETER (LAUTSTAERKE) | POTENTIOMETER<br>POTENTIOMETRE | POTENZIOMETRO<br>POTENCIOMETRO |
| 0007.000 | | 27511-219.00 | | POTENTIOMETER (CRISPENING) | POTENTIOMETER<br>POTENTIOMETRE | POTENZIOMETRO<br>POTENCIOMETRO |
| 0008.000 | | 8140-601-358 | | VERZOEG.LEITUNG | DELAY LINE<br>LIGNE DE RETARD | LINEA DI RITARDO<br>LINEA DE RETARDO |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| | | |
| C 1637 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| C 1952 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| |  | |
| C 1420 | 8415-161-126 | ELKO GRM 22UF 25V |
| C 1486 | 8415-261-246 | ELKO GRP 10UP 50V |
| C 1685 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 1719 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1873 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1876 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1880 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1952 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| C 1986 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2038 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2090 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2115 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2130 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2195 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2198 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2203 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2265 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2270 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2275 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 2280 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| C 2285 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| C 2288 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| C 2292 | 8415-161-135 | ELKO GRM 5 100UF 25V |
| CC 1351 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1353 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1355 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1356 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1362 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1364 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1367 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1368 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1380 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1388 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1390 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1392 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1394 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1395 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 1402 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 1403 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CC 1405 | 8672-260-140 | KEFQ 1206 330PF 5% |
| CC 1407 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1413 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1423 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1430 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1435 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1440 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1445 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 1452 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1453 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1460 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1465 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 1467 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 1470 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1475 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1480 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1483 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1488 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1495 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1497 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1502 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1504 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1510 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1515 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1525 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1536 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1555 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1558 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1572 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1587 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1595 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1610 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1615 | 8672-160-133 | KEFQ 0805 82PF 5% |
| CC 1617 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1620 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1627 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1635 | 8672-160-139 | KEFQ 0805 270PF 5% |
| CC 1640 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1660 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1676 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 1677 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 1679 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1702 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 1705 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1707 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 1717 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |

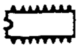
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CC 1730 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1733 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 1752 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1753 | 8672-260-136 | KEFQ 1206 150PF 5% |
| CC 1765 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1767 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 1773 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1775 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1779 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 1780 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1787 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1791 | 8672-160-133 | KEFQ 0805 82PF 5% |
| CC 1793 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1797 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1798 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1855 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1862 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1864 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1866 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1887 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1890 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1893 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 1895 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1897 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1898 | 8672-160-133 | KEFQ 0805 82PF 5% |
| CC 1908 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1912 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1913 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 1922 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1925 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1927 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1930 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1935 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1965 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1970 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 1972 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1975 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2028 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2037 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2043 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2048 | 8672-160-133 | KEFQ 0805 82PF 5% |
| CC 2055 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2057 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 2058 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2070 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2105 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2107 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2109 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2110 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2125 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2127 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 2138 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2140 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2162 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2164 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2165 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2175 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2180 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2212 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2227 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2230 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2232 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2245 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2250 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2255 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 2282 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2284 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2287 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2290 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 2295 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| | | |
| CD 1410 | 8309-534-148 | MELF-DIODE RLS 4148R'CHM |

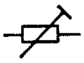
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CD 1430 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 1588 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 1590 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 1780 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 1782 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 1935 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 1992 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| D 2001 | 8309-215-020 | DIODE 1 N 4004 |
| D 2001 | 8309-215-020 | DIODE 1 N 4004 |
| CD 2153 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2155 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2157 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2158 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2160 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2162 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2164 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2165 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2183 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2185 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2192 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2200 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2205 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2215 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2217 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2223 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2227 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2230 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2232 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2235 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2237 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2238 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2240 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2242 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2252 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
| CD 2257 | 8309-401-683 | MELF-DIODE RLS 135 R'OHM |
|  | | |
| CR1358 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 1364 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1365 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1368 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1372 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1373 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1376 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1382 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 1386 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 1388 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 1390 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1397 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 1405 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 1407 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 1408 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1410 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1423 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1425 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 1426 | 8706-297-053 | R-CHIP 1206 150 OHM 5% |
| CR 1429 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1434 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1435 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 1437 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1438 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1440 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1442 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1443 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1452 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1453 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1454 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1455 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1457 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1458 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1462 | 8706-297-125 | R-CHIP 1206 150 KOHM 5% |
| CR 1463 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D) DESCRIPTION (GB) DENOMINAZIONE (I) DESIGNATION (F) DENOMINACION (E) |
|---|---|---|
| CR 1471 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 1478 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 1480 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 1485 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1486 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1490 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1491 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1493 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1495 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 1498 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1500 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1502 | 8706-297-053 | R-CHIP 1206 150 OHM 5% |
| CR 1504 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1510 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1515 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1516 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1518 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1520 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1522 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1523 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1525 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1526 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1528 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 1530 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 1532 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 1533 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1535 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1536 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1540 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1543 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1544 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1546 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1547 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1549 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1550 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1552 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1553 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 1555 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1556 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 1558 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1560 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1562 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1573 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1575 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1576 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1578 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1580 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1582 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1585 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1596 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 1598 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1600 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1602 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 1610 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 1612 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 1615 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1619 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1620 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 1622 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1623 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1625 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1630 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1635 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 1641 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1643 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1645 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1647 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 1655 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1657 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1662 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1663 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 1679 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1680 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1682 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D) DESCRIPTION (GB) DENOMINAZIONE (I) DESIGNATION (F) DENOMINACION (E) |
|---|---|---|
| CR 1683 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1687 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 1688 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1690 | 8706-297-153 | R-CHIP 1206 2,2 MOHM 10% |
| CR 1691 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1693 | 8706-297-313 | R-CHIP 1206 47 KOHM 2% |
| CR 1695 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1697 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1708 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1710 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1712 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1715 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 1720 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 1722 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1725 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1730 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 1732 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1733 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1737 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1740 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1742 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1745 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1747 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1750 | 8706-297-091 | R-CHIP 1206 5,6 KOHM 5% |
| CR 1753 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1755 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1757 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1758 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1760 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1762 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1765 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1771 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1775 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 1777 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1779 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1782 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1784 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1785 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1787 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 1789 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1791 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 1795 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 1857 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1862 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 1866 | 8706-297-153 | R-CHIP 1206 2,2 MOHM 10% |
| CR 1868 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1870 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1872 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1873 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 1875 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1876 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 1878 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1880 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 1881 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 1883 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1885 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1887 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1888 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 1890 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 1891 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 1902 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1904 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1905 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1907 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1908 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1910 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1913 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 1915 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1925 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1926 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1927 | 8706-297-115 | R-CHIP 1206 56 KOHM 5% |
| CR 1930 | 8706-297-141 | R-CHIP 1206 680 KOHM 5% |
| CR 1932 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1935 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 1942 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1944 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1945 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1947 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1949 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1965 | 8706-297-117 | R-CHIP 1206 68 KOHM 5% |
| CR 1967 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1968 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1970 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 1971 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1972 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1973 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1975 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1978 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 1980 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 1982 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1983 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 1985 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1986 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1992 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1996 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1997 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1998 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 2001 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 2002 | 8706-297-031 | R-CHIP 1206 18 OHM 5% |
| CR 2012 | 8706-297-045 | R-CHIP 1206 68 OHM 5% |
| CR 2015 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 2020 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2022 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2032 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2033 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 2038 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 2040 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2041 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2043 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 2045 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2046 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2060 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2062 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2064 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 2065 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 2072 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2075 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2077 | 8706-297-045 | R-CHIP 1206 68 OHM 5% |
| CR 2082 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2084 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2085 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2087 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 2088 | 8706-297-045 | R-CHIP 1206 68 OHM 5% |
| CR 2090 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2092 | 8706-297-045 | R-CHIP 1206 68 OHM 5% |
| CR 2102 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2103 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2105 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2109 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2110 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2115 | 8706-297-051 | R-CHIP 1206 120 OHM 5% |
| CR 2117 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2119 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2121 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2122 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2123 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 2125 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2127 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2130 | 8706-297-051 | R-CHIP 1206 120 OHM 5% |
| CR 2137 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2138 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 2140 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 2153 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2155 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2157 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2162 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2164 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2165 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2168 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2170 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2181 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2183 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2185 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2188 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2190 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2192 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2195 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2197 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2198 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2200 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2203 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2207 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2208 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2210 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2212 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2213 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 2215 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2217 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2218 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2220 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2223 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2225 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 2227 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2230 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2232 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2238 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2240 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2242 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2248 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2250 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2252 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2254 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2255 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 2257 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2258 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 2260 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2264 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2265 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2267 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2268 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2270 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2272 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2273 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 2275 | 8706-297-046 | R-CHIP 1206 75 OHM 5% |
| CR 2295 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 2297 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 2298 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 2299 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CT 1358 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1382 | 8301-002-848 | SMD-TRANS.BC 848 A |
| CT 1390 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1435 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1452 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1458 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1465 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1486 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 1497 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1518 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1520 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1525 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1530 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1535 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1553 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 1558 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1575 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1580 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1585 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1600 | 8301-000-848 | SMD-TRANS.BC 848 |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CT 1625 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1630 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1647 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1655 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1677 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 1697 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1715 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1725 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1735 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1755 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1780 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1789 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1857 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 1883 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 1885 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1902 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1910 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1925 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1926 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1935 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1945 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1970 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1975 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 1980 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 1983 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1992 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 1998 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 2040 | 8301-130-550 | SMD-TRANS.BF 550 |
| CT 2045 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2072 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2082 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2085 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2153 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2155 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2157 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2170 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2183 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2185 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2190 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2192 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2200 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2205 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2212 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2215 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2217 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2220 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2223 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2238 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2240 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2242 | 8301-000-858 | SMD-TRANS.BC 858 |
| CT 2250 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2260 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 2298 | 8301-000-848 | SMD-TRANS.BC 848 |
|  | | |
| CIC 148 | 8305-777-053 | SMD IC PC 74 HC 4053 T |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖⓑ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ | |
|---|---|---|---|
| CIC 156 | 8305-777-066 | SMD IC PC 74 HC 4066 T | |
| IC 1620 | 8305-076-308 | IC AN 6308 | |
| IC 1795 | 8305-076-308 | IC AN 6308 | |
| IC 1880 | 8305-205-206 | IC MC 1377 P | |
| IC 2055 | 8305-076-308 | IC AN 6308 | |
| IC 2065 | 8305-104-821 | IC BA 7021 | |
| IC 2130 | 8305-332-820 | IC TDA 2822 M | |
| | | | |
| L 1403 | 19202-567.97 | SPULE 10UH 7X7 | |
| L 1415 | 8140-525-991 | DR N-GR | 6,8UH |
| L 1432 | 19202-566.97 | SPULE | |
| L 1450 | 8140-526-109 | DR B-GR | 150UH |
| L 1477 | 8140-526-109 | DR B-GR | 150UH |
| L 1528 | 8140-525-861 | DR N-GR | 47UH |
| L 1582 | 8140-526-931 | DR N-GR | 220UH |
| L 1584 | 8140-526-931 | DR N-GR | 220UH |
| L 1615 | 19202-564.97 | SPULE * | |
| L 1635 | 19202-564.97 | SPULE * | |
| L 1753 | 19202-566.97 | SPULE | |
| L 1775 | 19202-569.97 | SPULE * | |
| L 1791 | 19202-569.97 | SPULE * | |
| L 1893 | 19202-567.97 | SPULE 10UH 7X7 | |
| L 1900 | 19202-569.97 | SPULE * | |
| L 2048 | 19202-569.97 | SPULE * | |
| L 2080 | 19202-569.97 | SPULE * | |
| L 2280 | 8140-526-930 | DR N-GR | 120UH |
| L 2282 | 8140-526-903 | DR N-GR | 33UH |
| L 2285 | 8140-526-903 | DR N-GR | 33UH |
| L 2292 | 8140-526-930 | DR N-GR | 120UH |
| | | | |
| Q 1370 | 8382-248-997 | QUARZ 8,867238 MHZ | |
| Q 1637 | 8382-248-997 | QUARZ 8,867238 MHZ | |
| Q 1950 | 8382-240-994 | QUARZ 4,433619 MHZ | |
|  | | | |
| R 1450 | 8792-003-135 | ESTR.S6 1 KOHM LIN | |
| R 1567 | 8792-003-135 | ESTR.S6 1 KOHM LIN | |
| R 1568 | 8792-003-135 | ESTR.S6 1 KOHM LIN | |
| R 1570 | 8792-003-135 | ESTR.S6 1 KOHM LIN | |
| R 1780 | 8792-003-135 | ESTR.S6 1 KOHM LIN | |
| | | | |
| T 2001 | 8303-275-327 | TRANS.BC 327-40 | |
| T 2062 | 8303-269-338 | TRANS.BC 338 | |
| T 2075 | 8303-269-338 | TRANS.BC 338 | |
| T 2087 | 8303-269-338 | TRANS.BC 338 | |

# A 041 27505 - 073.01 Tonbaustein / Sound module / Module BF / Audio modulo

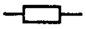
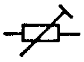
| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0001.000 | | 27511-444.01 | 2X | CINCHBUCHSE 2-FACH (EING./AUSG.)<br>PRISE CINCH | CINCH-SOCKET<br>CONECT. CINCH | PRESA CINCH |
| 0002.000 | | 27511-470.00 | 2X | KLINKENBUCHSE D 6,4 (MIKRO/L-R)<br>EMBASE JACK | MINIATURE SOCKET<br>CONECTOR HEMBRA PARA JACK | PRESA JACK |
| 0003.000 | | 27511-214.00 | | POTENTIOMETER (MASTER<br>POTENTIOMETRE | POTENTIOMETER<br>POTENCIOMETRO | POTENZIOMETRO |
| 0004.000 | | 27511-215.00 | 2X | POTENTIOMETER (LINE/MIX)<br>POTENTIOMETRE | POTENTIOMETER<br>POTENCIOMETRO | POTENZIOMETRO |
| 0005.000 | | 27511-216.00 | | POTENTIOMETER (OUTPUT<br>POTENTIOMETRE | POTENTIOMETER<br>POTENCIOMETRO | POTENZIOMETRO |
| 0006.000 | | 27511-217.00 | | POTENTIOMETER (MIKRO)<br>POTENTIOMETRE | POTENTIOMETER<br>POTENCIOMETRO | POTENZIOMETRO |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| ─┤⊏⁺─ | ─┤├─ | |
| C 803 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 808 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 815 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 822 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 825 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 832 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 835 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 840 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 843 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 847 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 851 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 857 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 860 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 862 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 905 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 907 | 8415-164-095 | ELKO CC 220UF 16V |
| C 912 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 917 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 921 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 925 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 927 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 933 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 953 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 956 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 958 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 982 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 990 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 995 | 8415-162-126 | ELKO GRP 22UF 25V |
| C 1003 | 8415-164-095 | ELKO CC 220UF 16V |
| C 1008 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1025 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1030 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1037 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1055 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1068 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 1257 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 1287 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 1320 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 1340 | 8415-162-246 | ELKO GRP 10UF 50V |
| CC 805 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 810 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 828 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 834 | 8672-260-130 | KEFQ 1206 47PF 5% |
| CC 842 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 856 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 919 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 923 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 1021 | 8672-260-150 | KEFQ 1206 2200PF 5% |
| CC 1022 | 8672-260-135 | KEFQ 1206 120PF 5% |

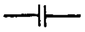
| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CC 1048 | 8672-260-150 | KEFQ 1206 2200PF 5% |
| CC 1049 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 1088 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1097 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1100 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1102 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1107 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1109 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1120 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1133 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1142 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 1145 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1150 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 1203 | 8672-267-253 | KEFQ 1206 3900PF 20% |
| CC 1227 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 1255 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 1324 | 8672-260-143 | KEFQ 1206 560PF 5% |
| CC 1332 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 1335 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| ─▷\|─ | | |
| CD 980 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 990 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 1237 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 1285 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 1290 | 8309-534-110 | MELF-DIODE BAS 85 VAL |
| CD 1295 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 1302 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 1304 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| ─▭─ | | |
| CR 801 | 8706-297-001 | R-CHIP 1206 1 OHM 5% |
| CR 805 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 806 | 8706-297-043 | R-CHIP 1206 56 OHM 5% |
| CR 808 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 810 | 8706-297-043 | R-CHIP 1206 56 OHM 5% |
| CR 812 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 814 | 8706-297-091 | R-CHIP 1206 5,6 KOHM 5% |
| CR 815 | 8706-297-137 | R-CHIP 1206 470 KOHM 5% |
| CR 818 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 820 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 828 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 830 | 8706-297-043 | R-CHIP 1206 56 OHM 5% |
| CR 832 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 834 | 8706-297-043 | R-CHIP 1206 56 OHM 5% |
| CR 835 | 8706-297-137 | R-CHIP 1206 470 KOHM 5% |
| CR 836 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 837 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |

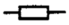
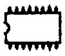
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 838 | 8706-297-091 | R-CHIP 1206 5,6 KOHM 5% |
| CR 839 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 842 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 843 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 845 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 847 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 851 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 853 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 854 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 855 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 856 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 857 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 859 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 860 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 862 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 863 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 865 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 866 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 867 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 868 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 869 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 870 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 872 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 873 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 875 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 877 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 880 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 885 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 887 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 889 | 8706-297-108 | R-CHIP 1206 30 KOHM 5% |
| CR 891 | 8706-297-108 | R-CHIP 1206 30 KOHM 5% |
| CR 893 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 895 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 907 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 909 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 910 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 912 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 915 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 917 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 919 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 921 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 923 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 925 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 927 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 929 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 931 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 933 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 945 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 947 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 948 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 953 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 955 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 956 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 957 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 958 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 959 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 960 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 962 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 963 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 965 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 967 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 970 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 977 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 978 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 980 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 982 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 984 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 985 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 987 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 988 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 990 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 991 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 994 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 995 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 999 | 8706-297-127 | R-CHIP 1206 180 KOHM 5% |
| CR 1015 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1017 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1022 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1023 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1025 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1026 | 8706-297-082 | R-CHIP 1206 2,4 KOHM 5% |
| CR 1028 | 8706-297-082 | R-CHIP 1206 2,4 KOHM 5% |
| CR 1030 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1043 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1045 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1049 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1050 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1052 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1054 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 1056 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1057 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1058 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1062 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1063 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1064 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1067 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 1069 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1070 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1071 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1072 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1075 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1076 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1077 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1078 | 8706-297-103 | R-CHIP 1206 18 KOHM 5% |
| CR 1079 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1080 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1083 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1084 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1085 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1087 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1088 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1097 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1100 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1103 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 1107 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 1112 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1113 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1115 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1117 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1119 | 8706-297-061 | R-CHIP 1206 330 OHM 5% |
| CR 1123 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1128 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 1129 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1130 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1131 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 1133 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1136 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1142 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1143 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1148 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 1150 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1203 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1205 | 8706-297-083 | R-CHIP 1206 2,7 KOHM 5% |
| CR 1207 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 1210 | 8706-297-119 | R-CHIP 1206 82 KOHM 5% |
| CR 1212 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1215 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1223 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1227 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1230 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1233 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 1235 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1237 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 1238 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1245 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1247 | 8706-297-139 | R-CHIP 1206 560 KOHM 5% |
| CR 1251 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1253 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CR 1255 | 8706-297-114 | R-CHIP 1206 51 KOHM 5% |
| CR 1257 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1259 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1260 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 1263 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 1266 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 1282 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 1283 | 8706-297-143 | R-CHIP 1206 820 KOHM 5% |
| CR 1285 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 1288 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 1290 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 1292 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 1295 | 8706-297-147 | R-CHIP 1206 1,2 MOHM 10% |
| CR 1297 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1298 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1301 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 1302 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 1303 | 8706-297-137 | R-CHIP 1206 470 KOHM 5% |
| CR 1304 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 1305 | 8706-297-145 | R-CHIP 1206 1 MOHM 5% |
| CR 1306 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 1309 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1310 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1312 | 8706-297-031 | R-CHIP 1206 18 OHM 5% |
| CR 1314 | 8706-297-099 | R-CHIP 1206 12 KOHM 5% |
| CR 1315 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 1317 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 1320 | 8706-297-111 | R-CHIP 1206 39 KOHM 5% |
| CR 1324 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 1327 | 8706-297-117 | R-CHIP 1206 68 KOHM 5% |
| CR 1328 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 1330 | 8706-297-017 | R-CHIP 1206 4,7 OHM 5% |
| CR 1334 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 1335 | 8706-297-133 | R-CHIP 1206 330 KOHM 5% |
| CR 1340 | 8706-297-017 | R-CHIP 1206 4,7 OHM 5% |
| | | |
| CT 806 | 8301-185-019 | SMD-TRANS.BFS 19 VAL |
| CT 830 | 8301-185-019 | SMD-TRANS.BFS 19 VAL |
| CT 965 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 967 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 970 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 1060 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 1062 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 1073 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 1084 | 8301-004-848 | SMD-TRANS.BC 848 B |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| CT 1129 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 1245 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 1297 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 1305 | 8301-004-848 | SMD-TRANS.BC 848 B |
| T 1310 | 8303-205-558 | TRANS.BC 558 B |
| T 1315 | 8303-205-558 | TRANS.BC 558 B |
| CT 1327 | 8301-003-858 | SMD-TRANS.BC 858 B |
| T 1340 | 8303-205-558 | TRANS.BC 558 B |
| | | |
| F 1097 | 8140-601-316 | FILTER SLC-3346 |
| F 1265 | 07202-053.10 | LW - VORKREIS-ZUSATZSP. |
| F 1325 | 19202-645.10 | SPULE 10X10 |
| F 1340 | 19202-645.10 | SPULE 10X10 |
| | | |
| IC 810 | 8305-293-559 | IC RC 4559 NB RAY |
| IC 845 | 8305-293-559 | IC RC 4559 NB RAY |
| IC 855 | 8305-210-078 | IC MC 33078 P MOT |
| IC 885 | 8305-210-078 | IC MC 33078 P MOT |
| IC 910 | 19799-252.97 | IC 4052 (C-MOS) |
| IC 915 | 8305-210-078 | IC MC 33078 P MOT |
| IC 940 | 19799-252.97 | IC 4052 (C-MOS) |
| IC 945 | 8305-210-078 | IC MC 33078 P MOT |
| IC 955 | 19799-252.97 | IC 4052 (C-MOS) |
| IC 975 | 8305-205-098 | IC HEF 4094 VAL/CD 4094B |
| IC 980 | 8305-293-559 | IC RC 4559 NB RAY |
| IC 1055 | 8305-205-067 | MC 14066BCP MOT/HCF 4066 |
| IC 1075 | 8305-293-559 | IC RC 4559 NB RAY |
| IC 1210 | 8305-104-965 | IC BA 7765 S R'OHM |
| IC 1275 | 8305-205-098 | IC HEF 4094 VAL/CD 4094B |
| IC 1290 | 8305-204-357 | IC LM 358 N NSC/TID/MOT/ |
|  |  | |
| R 1003 ⚠ | 8766-701-041 | KSW SI A 47 OHM 5% -GA |
| R 1053 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |
| R 1055 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 1066 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |
| R 1068 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 1090 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |
| R 1105 | 8792-002-154 | ESTR.S6 22 KOHM LIN |
| R 1118 | 8792-002-125 | ESTR.S6 470 OHM LIN |
| R 1135 | 8792-002-144 | ESTR.S6 3,3 KOHM LIN |
| R 1322 | 8792-002-159 | ESTR.S6 47 KOHM LIN |

## A 042 27505 - 079.01 Bild-/Ton-Kopfverstärker / Head amplifier (Video / Audio) / Ampli de tetes (Video/ Audio) / Amplificatore testina (Video / Audio)

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
|  | | |
| CC 3504 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3512 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3522 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3532 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3540 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3542 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3550 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3557 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3560 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3567 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3574 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3580 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3585 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3587 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3593 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3595 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3597 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3600 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3611 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3615 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3620 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3625 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| | | |
| CD 3574 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| CD 3580 | 8309-402-102 | MELF-DIODE RLS 245 R'OHM |
| | | |
| CR 3502 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 3507 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3508 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3510 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 3515 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3517 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3520 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 3525 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3527 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3530 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 3535 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3537 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3538 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3539 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3540 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3542 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3545 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3547 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 3558 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 3559 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3561 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3562 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3563 | 8706-297-037 | R-CHIP 1206 33 OHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
|  | | |
| CR 3564 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3565 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3566 | 8706-297-037 | R-CHIP 1206 33 OHM 5% |
| CR 3570 | 8706-297-053 | R-CHIP 1206 150 OHM 5% |
| CR 3572 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3574 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3575 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3576 | 8706-297-053 | R-CHIP 1206 150 OHM 5% |
| CR 3578 | 8706-100-097 | R-CHIP 0805 10 KOHM 5% |
| CR 3579 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3580 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3581 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3585 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 3587 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3593 | 8706-297-025 | R-CHIP 1206 10 OHM 5% |
| CR 3595 | 8706-297-067 | R-CHIP 1206 560 OHM 5% |
| CR 3597 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3599 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3605 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3607 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3611 | 8706-297-059 | R-CHIP 1206 270 OHM 5% |
| CR 3613 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3615 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 3624 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| | | |
| CT 3507 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3515 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3525 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3535 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3562 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3565 | 8301-000-848 | SMD-TRANS.BC 848 |
| CT 3574 | 8301-008-818 | SMD-TRANS.BC 818-40 |
| CT 3580 | 8301-008-818 | SMD-TRANS.BC 818-40 |
|  | | |
| IC 3530 | 8305-073-311 | IC AN 3311 K MAT |
| IC 3600 | 8305-073-314 | IC AN 33154 K |
| | | |
| L 3553 | 8140-526-934 | DR N-GR 270UH |
| L 3558 | 8140-526-934 | DR N-GR 270UH |
| L 3615 | 8140-526-934 | DR N-GR 270UH |
| L 3620 | 8140-526-922 | DR N-GR 27UH |
| | | |
| R 3625 | 8792-002-146 | ESTR.S6 4,7 KOHM LIN |

# A 045 27505 - 081.01 Bildspeicher / Field memory / Memoire image / Memoria d´immagine

| Pos. Nr. Pos. No. | Abb Nr. Fig. No. | Sachnummer Part.No. Références No. ordine | Anz. | BEZEICHNUNG Ⓓ<br>DESIGNATION Ⓕ | DESCRIPTION (GB)<br>DENOMINACION Ⓔ | DENOMINAZIONE Ⓘ |
|---|---|---|---|---|---|---|
| 0001.000 | | 29303-117.05 | | VERZOEGERUNGSLEITUNG | DELAY LINE<br>LIGNE A RETARD | LINEA DI RITARDO<br>LINEA DE RETARDO |
| 0003.000 | | 03908-583.00 | | STREIFEN | TAPE<br>STREIFEN | BASE, PRESSORE<br>TIRA AUTOADHESIVA FIELTRO |
| 0004.000 | | 8140-601-088 | | F.3MHZ-LPF H290LNMN3296TT | FILTER<br>BOBINE 3 MHZ | FILTRO<br>FILTRO |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| C 3838 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| C 4038 | 8699-999-345 | TR.13 4,5/20PF VCT 56 |
| CC 3802 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3808 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 3810 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 3815 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 3820 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 3821 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 3835 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3837 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 3840 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 3849 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3852 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3858 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 3860 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 3867 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 3869 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 3870 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 3873 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 3880 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 3892 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3908 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 3910 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 3935 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 3945 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 3951 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 3970 | 8672-260-128 | KEFQ 1206 33PF 5% |
| CC 3982 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3998 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 3999 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4002 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4008 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 4010 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 4015 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 4020 | 8672-260-133 | KEFQ 1206 82PF 5% |
| CC 4021 | 8672-267-255 | KEFQ 1206 4700PF 20% |
| CC 4035 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4037 | 8672-260-123 | KEFQ 1206 12PF 5% |
| CC 4040 | 8672-267-179 | KEFQ 1206 0,047UF 10% |
| CC 4049 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 4052 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 4067 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4070 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 4071 | 8672-260-138 | KEFQ 1206 220PF 5% |
| CC 4083 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4092 | 8672-267-271 | KEFQ 1206 0,022UF 20% |
| CC 4094 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 4095 | 8672-260-135 | KEFQ 1206 120PF 5% |
| CC 4098 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 4105 | 8672-260-137 | KEFQ 1206 180PF 5% |
| CC 4112 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4128 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 4130 | 8672-267-271 | KEFQ 1206 0,022UF 20% |

| Pos. Nr. Pos. No. | Sachnummer Part number Références No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CC 4155 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 4165 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 4181 | 8672-260-128 | KEFQ 1206 33PF 5% |
| CC 4192 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4205 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4207 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4208 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4211 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4212 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4215 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4227 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4232 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4233 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4235 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4247 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4252 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4253 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4254 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4255 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4267 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4275 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4277 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4287 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4295 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4301 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4302 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4303 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4304 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4310 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 4312 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 4320 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4330 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4355 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4363 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 4365 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4368 | 8672-267-263 | KEFQ 1206 0,01 UF 20% |
| CC 4378 | 8672-260-127 | KEFQ 1206 27PF 5% |
| CC 4382 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4384 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4398 | 8672-267-239 | KEFQ 1206 1000PF 20% |
| CC 4405 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4409 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CC 4422 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4424 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4430 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4447 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4449 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4453 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4472 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4482 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4485 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4490 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4497 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4550 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4555 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4561 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4567 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |
| CC 4578 | 8672-267-287 | KEFQ 1206 0,1 UF 20% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| —▷\|— | | |
| CD 3925 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 3935 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 3953 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 3955 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 3967 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 4145 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 4155 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 4255 | 8309-534-110 | MELF-DIODE BAS 85 VAL |
| CD 4285 | 8309-455-027 | MELF-Z DIODE 2,7 C 0,5W |
| CD 4494 | 8309-534-148 | MELF-DIODE RLS 4148 R'OHM |
| CD 4572 | 8309-455-027 | MELF-Z DIODE 2,7 C 0,5W |
| —▭— | | |
| CR 3803 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3805 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 3806 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3810 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3811 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3813 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 3817 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3818 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3822 | 8706-297-137 | R-CHIP 1206 470 KOHM 5% |
| CR 3823 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3824 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 3825 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 3826 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3830 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3832 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 3840 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3845 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3847 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3849 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 3852 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 3854 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 3865 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3873 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3880 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 3894 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3895 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3897 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3899 | 8706-297-313 | R-CHIP 1206 47 KOHM 2% |
| CR 3902 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 3914 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 3916 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3917 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3918 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3921 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 3922 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3923 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 3925 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 3926 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 3927 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3929 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 3932 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3933 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3935 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 3937 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3938 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3945 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3947 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3951 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3952 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3953 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3955 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3956 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3957 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 3958 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 3960 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3962 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3964 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3970 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION (GB)<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 3972 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3976 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 3978 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3980 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 3982 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 3983 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3985 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 3987 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 3991 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 3992 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 3993 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4003 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 4005 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 4007 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4010 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4011 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4013 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 4017 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4018 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4023 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4025 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 4026 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4030 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4032 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 4040 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4045 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4047 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 4049 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 4052 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 4054 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 4056 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4058 | 8706-297-085 | R-CHIP 1206 3,3 KOHM 5% |
| CR 4060 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4062 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 4064 | 8706-297-055 | R-CHIP 1206 180 OHM 5% |
| CR 4068 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4072 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4074 | 8706-297-087 | R-CHIP 1206 3,9 KOHM 5% |
| CR 4075 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4077 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 4079 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4085 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4090 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4098 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4105 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 4114 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4115 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4117 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 4118 | 8706-297-313 | R-CHIP 1206 47 KOHM 2% |
| CR 4122 | 8706-297-129 | R-CHIP 1206 220 KOHM 5% |
| CR 4134 | 8706-297-105 | R-CHIP 1206 22 KOHM 5% |
| CR 4136 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4137 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 4138 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4142 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4143 | 8706-297-033 | R-CHIP 1206 22 OHM 5% |
| CR 4144 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4145 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4146 | 8706-297-077 | R-CHIP 1206 1,5 KOHM 5% |
| CR 4147 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4149 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 4152 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 4153 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4155 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 4157 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4158 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4165 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4167 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4174 | 8706-297-113 | R-CHIP 1206 47 KOHM 5% |
| CR 4175 | 8706-297-109 | R-CHIP 1206 33 KOHM 5% |
| CR 4176 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4181 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4183 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 4184 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CR 4187 | 8706-297-081 | R-CHIP 1206 2,2 KOHM 5% |
| CR 4188 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4190 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4192 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 4194 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4197 | 8706-297-069 | R-CHIP 1206 680 OHM 5% |
| CR 4198 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4199 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4201 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4202 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 4203 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4205 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 4220 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4240 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4256 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 4257 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4276 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4279 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 4280 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4281 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 4282 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 4283 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4284 | 8706-297-089 | R-CHIP 1206 4,7 KOHM 5% |
| CR 4285 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4289 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4295 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4297 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 4298 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 4299 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 4300 | 8706-297-079 | R-CHIP 1206 1,8 KOHM 5% |
| CR 4310 | 8706-297-049 | R-CHIP 1206 100 OHM 5% |
| CR 4358 | 8706-297-075 | R-CHIP 1206 1,2 KOHM 5% |
| CR 4360 | 8706-297-123 | R-CHIP 1206 120 KOHM 5% |
| CR 4362 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 4363 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 4367 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4368 | 8706-297-121 | R-CHIP 1206 100 KOHM 5% |
| CR 4373 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4375 | 8706-297-101 | R-CHIP 1206 15 KOHM 5% |
| CR 4380 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4397 | 8706-297-095 | R-CHIP 1206 8,2 KOHM 5% |
| CR 4398 | 8706-297-093 | R-CHIP 1206 6,8 KOHM 5% |
| CR 4415 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4417 | 8706-297-071 | R-CHIP 1206 820 OHM 5% |
| CR 4434 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 4440 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4442 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 4459 | 8706-297-000 | R-CHIP 1206 0 OHM |
| CR 4465 | 8706-297-057 | R-CHIP 1206 220 OHM 5% |
| CR 4467 | 8706-297-063 | R-CHIP 1206 390 OHM 5% |
| CR 4480 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4486 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4495 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4497 | 8706-297-257 | R-CHIP 1206 220 OHM 2% |
| CR 4500 | 8706-297-253 | R-CHIP 1206 150 OHM 2% |
| CR 4507 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4510 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4512 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4514 | 8706-297-257 | R-CHIP 1206 220 OHM 2% |
| CR 4515 | 8706-297-253 | R-CHIP 1206 150 OHM 2% |
| CR 4522 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4525 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4528 | 8706-297-283 | R-CHIP 1206 2,7 KOHM 2% |
| CR 4530 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4532 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4548 | 8706-297-107 | R-CHIP 1206 27 KOHM 5% |
| CR 4549 | 8706-297-097 | R-CHIP 1206 10 KOHM 5% |
| CR 4562 | 8706-297-073 | R-CHIP 1206 1 KOHM 5% |
| CR 4572 | 8706-297-065 | R-CHIP 1206 470 OHM 5% |
| CR 4575 | 8706-297-285 | R-CHIP 1206 3,3 KOHM 2% |
| CT 3805 | 8301-004-848 | SMD-TRANS.BC 848 B |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG Ⓓ<br>DESCRIPTION Ⓖ<br>DENOMINAZIONE Ⓘ<br>DESIGNATION Ⓕ<br>DENOMINACION Ⓔ |
|---|---|---|
| CT 3813 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3825 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3918 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 3920 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 3925 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3932 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3940 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 3950 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 3953 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 3956 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3960 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3968 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3975 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3977 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 3983 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 3985 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 3991 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4005 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4013 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4025 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4060 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 4065 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 4075 | 8301-185-020 | SMD-TRANS.BFS 20 ON4158 |
| CT 4080 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 4138 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 4140 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 4145 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4152 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4160 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 4170 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 4175 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4190 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 4192 | 8301-006-858 | SMD-TRANS.BC 858 C |
| CT 4199 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4201 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4203 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4204 | 8301-003-858 | SMD-TRANS.BC 858 B |
| CT 4280 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 4283 | 8301-006-848 | SMD-TRANS.BC 848 C |
| CT 4380 | 8301-195-052 | SMD-TRANS.BSV 52 VAL |
| CT 4495 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4500 | 8301-002-848 | SMD-TRANS.BC 848 A |
| CT 4505 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4507 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4510 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4512 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4515 | 8301-002-848 | SMD-TRANS.BC 848 A |
| CT 4520 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4522 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4525 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4530 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4532 | 8301-004-848 | SMD-TRANS.BC 848 B |
| CT 4540 | 8301-004-848 | SMD-TRANS.BC 848 B |
| IC 3840 | 8305-334-557 | IC TDA 4557 |
| IC 3910 | 8305-333-755 | IC TDA 3755 VAL |
| IC 4040 | 8305-334-557 | IC TDA 4557 |
| IC 4130 | 8305-333-755 | IC TDA 3755 VAL |
| IC 4210 | 8305-275-650 | IC UPD 6950 C NEC |
| IC 4290 | 8305-204-357 | IC LM 358 N NSC/TID/MOT/ |
| IC 4360 | 8305-204-357 | IC LM 358 N NSC/TID/MOT/ |
| IC 4420 | 8305-275-600 | IC UPD 6900 NEC |
| IC 4570 | 8305-204-357 | IC LM 358 N NSC/TID/MOT/ |
| L 3801 | 8140-525-877 | DR N-GR 10UH |
| L 3806 | 07202-384.97 | LAUFZEIT-SPULE * |
| L 3818 | 19202-569.97 | SPULE * |
| L 3830 | 8140-525-877 | DR N-GR 10UH |
| L 3849 | 19202-566.97 | SPULE |
| L 3850 | 8140-526-926 | DR N-GR 12UH |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| L 3870 | 19202-567.97 | SPULE 10UH 7X7 |
| L 3875 | 19202-566.97 | SPULE |
| L 3882 | 19202-566.97 | SPULE |
| L 3999 | 8104-982-014 | DAEMPFUNGSPERLE |
| L 4001 | 8140-526-926 | DR N-GR 12UH |
| L 4007 | 07202-384.97 | LAUFZEIT-SPULE * |
| L 4018 | 19202-569.97 | SPULE * |
| L 4030 | 8140-526-926 | DR N-GR 12UH |
| L 4049 | 19202-566.97 | SPULE |
| L 4050 | 8140-526-926 | DR N-GR 12UH |
| L 4095 | 19202-567.97 | SPULE 10UH 7X7 |
| L 4100 | 19202-566.97 | SPULE |
| L 4107 | 19202-566.97 | SPULE |
| L 4220 | 8140-526-931 | DR N-GR 220UH |
| L 4240 | 8140-526-931 | DR N-GR 220UH |
| L 4265 | 8104-982-014 | DAEMPFUNGSPERLE |
| L 4275 | 8104-982-014 | DAEMPFUNGSPERLE |
| L 4370 | 07202-329.97 | SPULE 7X7 |
| L 4384 | 8104-982-014 | DAEMPFUNGSPERLE |
| Q 3837 | 8382-248-997 | QUARZ 8,867238 MHZ |
| Q 4037 | 8382-248-997 | QUARZ 8,867238 MHZ |

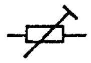
| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| R 3827 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 3905 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 3920 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 3930 | 8792-002-158 | ESTR.S6 33 KOHM LIN |
| R 3990 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 4065 | 8792-003-135 | ESTR.S6 1 KOHM LIN |
| R 4080 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 4125 | 8792-002-151 | ESTR.S6 10 KOHM LIN |
| R 4140 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 4150 | 8792-002-158 | ESTR.S6 33 KOHM LIN |
| R 4195 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| R 4410 | 8792-002-017 | ESTR.S6 220 OHM LIN |
| R 4435 | 8792-002-017 | ESTR.S6 220 OHM LIN |
| R 4460 | 8792-002-017 | ESTR.S6 220 OHM LIN |
| R 4505 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 4520 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 4535 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| R 4540 | 8792-002-135 | ESTR.S6 1 KOHM LIN |
| T 3827 | 8303-205-548 | TRANS.BC 548 B |

## A 046 27505 - 080.01 ZF-Verstärker / Amplifier FI / Amplificateur FI / Amplificatore FI

| Pos.<br>Nr.<br>Pos.<br>No. | Abb<br>Nr.<br>Fig.<br>No. | Sachnummer<br>Part.No.<br>Références<br>No. ordine | Anz. | BEZEICHNUNG (D)<br>DESIGNATION (F) | DESCRIPTION (GB)<br>DENOMINACION (E) | DENOMINAZIONE (I) |
|---|---|---|---|---|---|---|
| 0001.000 | | 29301-413.02 | | STECKERSTIFT<br>PICOT | PLUG PIN<br>TERMINAL CONEX. | CONTATTO SPINA |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| C 3705 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 3706 | 8684-367-124 | KERKO.5 1000PF 20% |
| C 3712 | 8684-367-148 | KERKO.5 4700PF 20% |
| C 3716 | 8555-267-173 | MKT 5/1+3+25 0,1 UF 20% |
| C 3718 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 3721 | 8555-267-173 | MKT 5/1+3+25 0,1 UF 20% |
| C 3730 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 3731 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 3735 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 3738 | 8555-267-173 | MKT 5/1+3+25 0,1 UF 20% |
| C 3751 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 3778 | 8555-267-173 | MKT 5/1+3+25 0,1 UF 20% |
| C 3780 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 3792 | 8555-267-173 | MKT 5/1+3+25 0,1 UF 20% |
| C 3794 | 8415-162-246 | ELKO GRP 10UF 50V |
| C 3795 | 8684-367-124 | KERKO.5 1000PF 20% |
| C 3797 | 8684-367-124 | KERKO.5 1000PF 20% |
| C 3798 | 8415-162-325 | ELKO GRP 1UF 100V |
| C 3799 | 8415-162-325 | ELKO GRP 1UF 100V |
| F 3760 | 07202-666.10 | FILTER |
| F 3762 | 07202-666.10 | FILTER |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG (D)<br>DESCRIPTION (GB)<br>DENOMINAZIONE (I)<br>DESIGNATION (F)<br>DENOMINACION (E) |
|---|---|---|
| F 3770 | 07202-668.10 | FILTER |
| F 3783 | 07202-668.10 | FILTER |
| F 3710 | 8319-001-731 | OFW G 3203-P100 B39389 |
| F 3745 | 8602-755-035 | CERAMIC TRAP 30 |
| F 3755 | 19203-061.97 | KERAMIK-FILTER |
| F 3757 | 19203-065.97 | KERAMIK-FILTER |
| IC 3740 | 8305-306-008 | IC ZTK 9,0 ITT |
| IC 3770 | 8305-314-028 | IC U 2829 B TFK |
| L 3728 | 8140-525-998 | DR AX 0411-GA 15UH |
| L 3745 | 8140-526-104 | DR B-GR 15UH |
| L 3747 | 8140-526-110 | DR B-GR 33UH |
| L 3780 | 8140-525-998 | DR AX 0411-GA 15UH |
| L 3793 | 8140-525-998 | DR AX 0411-GA 15UH |
| Q 3797 | 8382-251-097 | QUARZ 10 MHZ |

| Pos.<br>Nr.<br>Pos.<br>No. | Sachnummer<br>Part number<br>Références<br>No. ordine | BEZEICHNUNG D<br>DESCRIPTION GB<br>DENOMINAZIONE I<br>DESIGNATION F<br>DENOMINACION E |
|---|---|---|
| |  | |
| R 3713 | 8792-001-146 | ESTR.P6 4,7 KOHM LIN |
| R 3718 | 8700-011-297 | KSW AX 0204-GA 10 KOHM |
| R 3743 | 8765-097-061 | MSW AX 0204-GA 330 OHM |
| R 3750 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 3786 | 8700-011-273 | KSW AX 0204-GA 1 KOHM |
| R 3788 | 8792-002-140 | ESTR.S6 2,2 KOHM LIN |
| | | |
| T 3718 | 8303-205-558 | TRANS.BC 558 B |
| T 3750 | 8303-205-558 | TRANS.BC 558 B |
| T 3786 | 8303-205-548 | TRANS.BC 548 B |

# Sicherheitsvorschriften/Safety requirements / Prescrizioni de sicurezza / Prescriptions de sécurité / Prescripciones de seguridad

**D**

**Achtung:** Bei Eingriffen ins Gerät sind die Sicherheitsvorschriften nach VDE 701 (reparaturbezogen) bzw. VDE 0860 / IEC 65 (gerätebezogen) zu beachten!

Bauteile nach IEC- bzw. VDE-Richtlinien ! Im Ersatzfall nur Teile mit gleicher Spezifikation verwenden!

**MOS -** Vorschriften beim Umgang mit MOS - Bauteilen beachten!

**GB**

**Attention:** Please observe the applicable safety requirements according to VDE 701 (concerning repairs) and VDE 0860 / IEC 65 (concerning type of product)!

Components to IEC or VDE guidelines! Only use components with the same specifications for replacement!

Observe **MOS** components handling instructions when servicing!

**I**

**Attenzione:** Osservarne le corrispondenti prescrizioni di sicurezza VDE 701 (concernente servizio) e VDE 0860 / IEC 65 (concernente il tipo di prodotto)!

Componenti secondo le norme VDE risp. te IEC! In caso di sostituzione impiegare solo componenti con le stesse caratteristiche.

Osservare le relative prescrizioni durante, lavori con componenti **MOS**!

**F**

**Attention:** Priere d'observer les prescriptions de sécurité VDE 701 (concernant les reparations) et VDE 0860 / IEC 65 (concernant le type de produit)!

Composants répondant aux normes VDE ou IEC. Les remplacer uniquement par des composants ayant les mêmes spécifications.

Lors de la manipulation des circuits **MOS**, respecter les pescriptions **MOS**!

**E**

**Atención:** Recomendamos las normas de seguridad VDE u otras normas equivalentes, por ejemplo: VDE 701 para reparaciones, VDE 0860 / IEC 65 para aparatos!

Componentes que cumplen las normas VDE/IEC. En caso de sustitución, emplear componentes con idénticas especificaciones!

Durante la reparacion observar las normas sobre componentes **MOS**!

**USA**

**U.S. & Canada**

**Attention**: This set can only be operated from AC mains of 120 V/60 Hz. Also observe the information given on the rear of the set.
CAUTION: For continued protection against risk of fire replace only with same type fuses!
CAUTION: To reduce the risk of electric shock, do not remove cover (or back), no user-serviceable parts inside, refer servicing to qualified service personnel.

Components to safety guidelines (IEC/U.L.)! Only use components with the same specifications for replacement!

Observe by checking leakage-current or resistance measurement that the exposed parts are acceptably insulated from the supply circuit.

Observe **MOS** components handling instructions when servicing!